

Service
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Service Manual



In this manual only the differences between the VP310 and the VP380 are mentioned.
For repair and partslist the Service Manual of the VP310 must be used.
Differences in the VP380:

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(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(S)

Varning!

Osynlig laserstråling när denna del är öppnad och spärren är urkopplad. Betakta ej strålen.

(DK)

Advarsell

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

(SF)

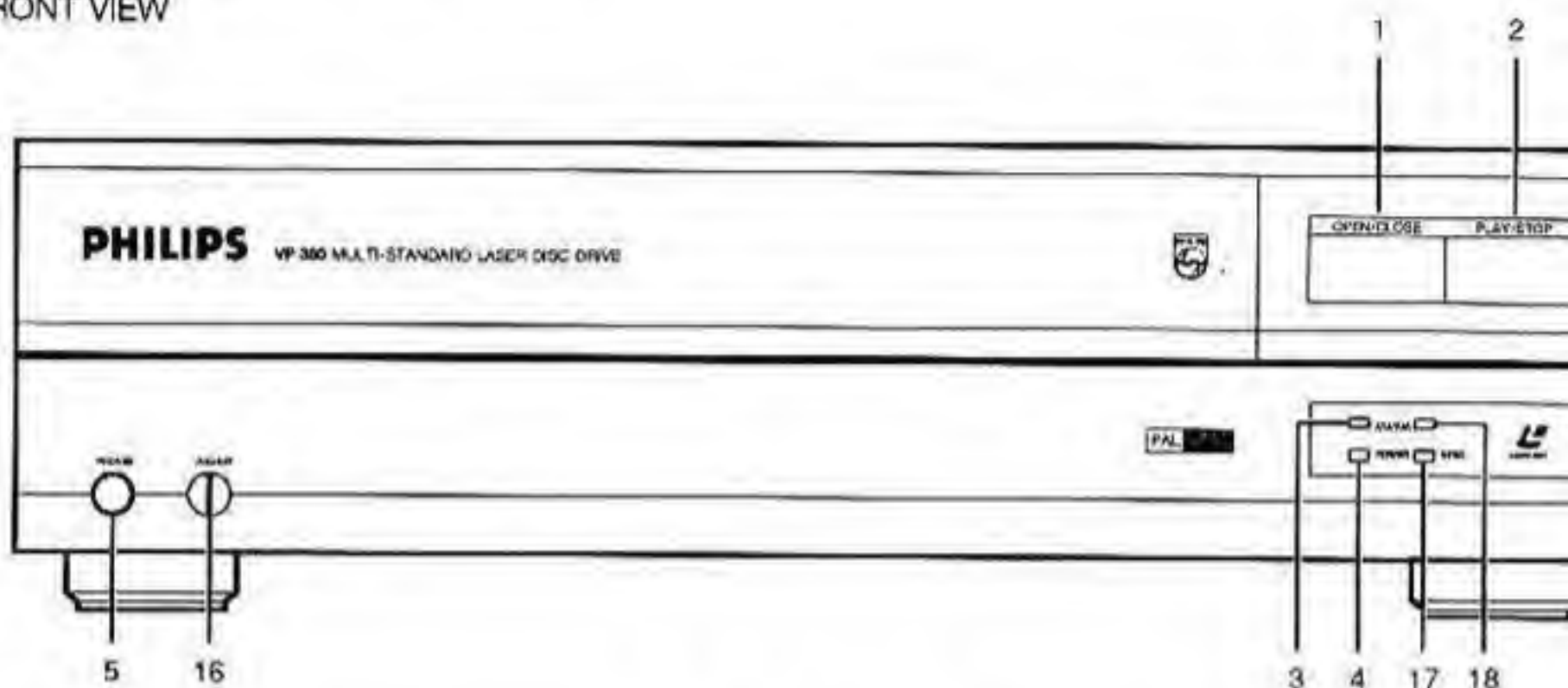
Varoitus!

Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilyä.

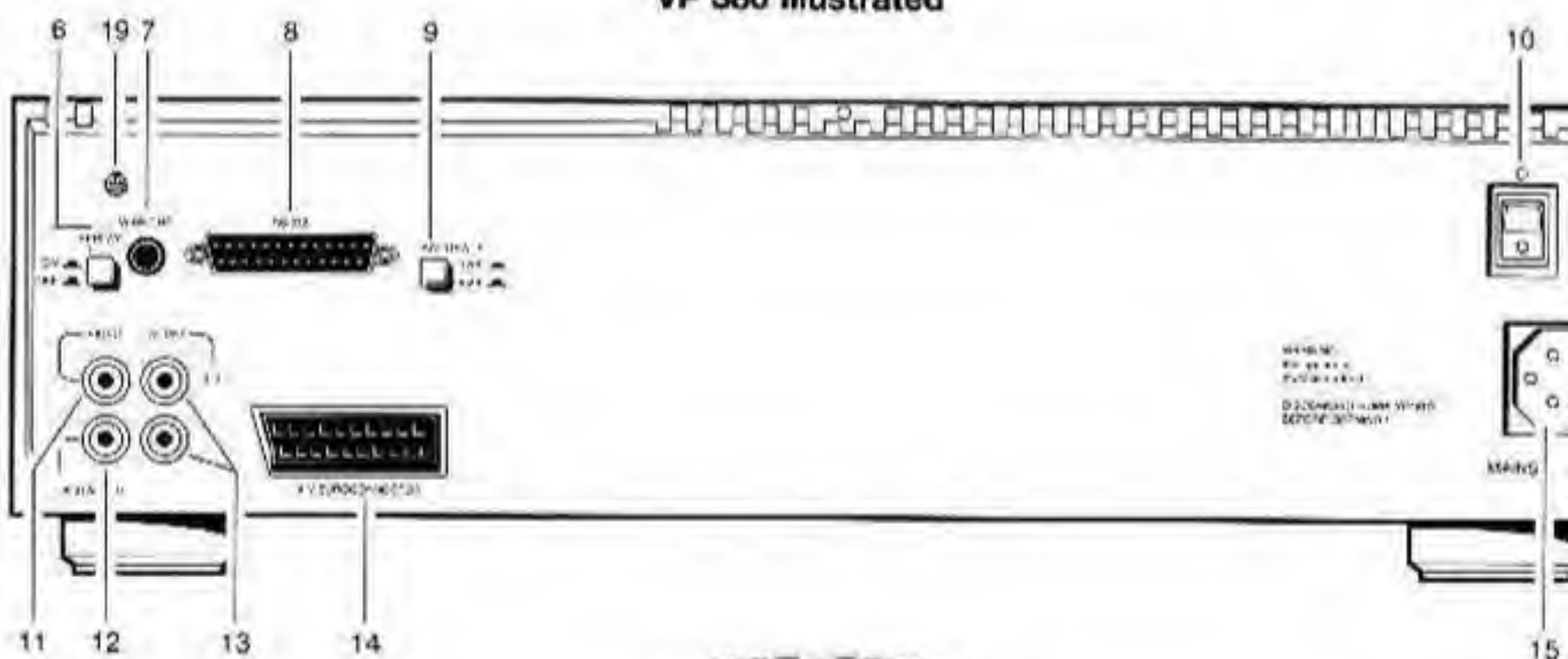


VP 312 VP 380 LASER DISC DRIVE

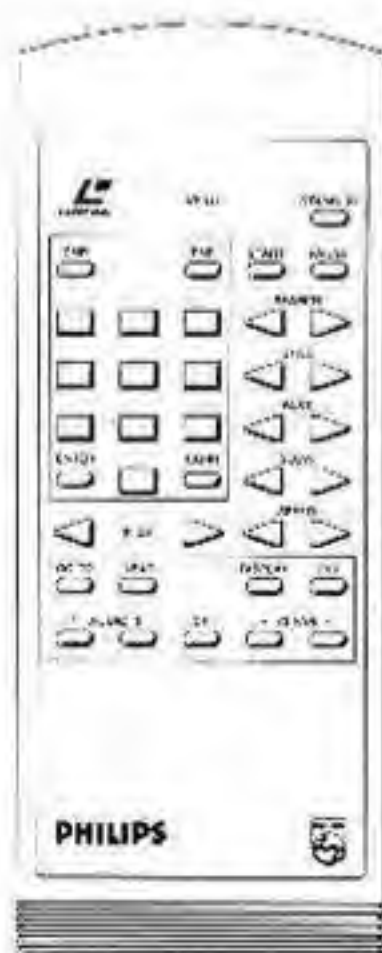
FRONT VIEW



VP 380 illustrated



REAR VIEW



Electrical safety	acc. to IEC 950 class I
Operational conditions	10 to 35°C
Rel. humidity	20 to 80 %
Storage conditions	-40 to 70°C
Rel. humidity	5 to 90 %
Dimensions	420 x 125 x 415 mm
disc-tray open	420 x 125 x 655 mm
Weight	9 kg (approx.)
TV system	625/50 PAL VP380 : 625/50 PAL 525/50 NTSC

Video

CVBS output	
Cinch	$1\text{ V}_{\text{pp}} \pm 50\text{ mV into } 75\text{ ohm}$
Euroconnector pin 19	$1\text{ V}_{\text{pp}} \pm 50\text{ mV into } 75\text{ ohm}$
RGB output	
Europconnector	
R (pin 15)	0.7 V into 75 ohm
G (pin 11)	0.7 V into 75 ohm
B (pin 7)	0.7 V into 75 ohm
Video bandwidth	RGB : PAL MHz (-3 dB), 3 CVBS : MHz (-3 dB), 3 encoded VP380 : NTSC CVBS 4.2 MHz (-8 dB)
Signal-to-noise ratio	40 dB typ. unweighted (disc dependent) 50 dB typ. weighted (disc dependent)
Timebase instability	less than 20 ns (normal play)

Audio

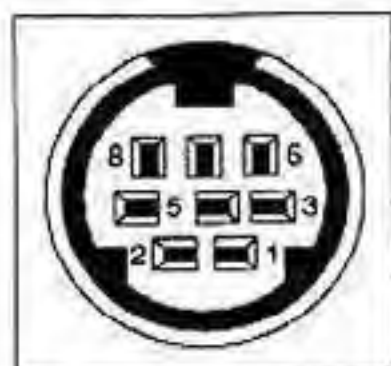
Analog

Audio output	550 mV r.m.s./1k ohm at 100 % modulation depth
Cinch	
Audio output	
Euroconnector pins 1 & 3	275 mV r.m.s./1k ohm at 100 % modulation depth
Audio bandwidth	20 - 20 000 Hz - 3 dB
Signal-to-noise ratio	>50 dB weighted VP380 : CX on > 62 dB (disc dependent)
Channel separation	>50 dB

Digital

Output voltage	Cinch 200 mVrms $\pm 1.5\text{ dB at } -20\text{ dB, } 1\text{ KHz}$
Euroconnector pins 1 x 3	Cinch 100 mVrms $\pm 1.5\text{ dB at } -20\text{ dB, } 1\text{ KHz}$
Signal to noise ratio	$\geq 90\text{ dB}$
Dynamic range	$\geq 86\text{ dB}$
Channel separation	$\geq 80\text{ dB}$
Digital out	$0.5\text{ V}_{\text{pp}} \pm 20\% \text{ into } 75\text{ ohm}$

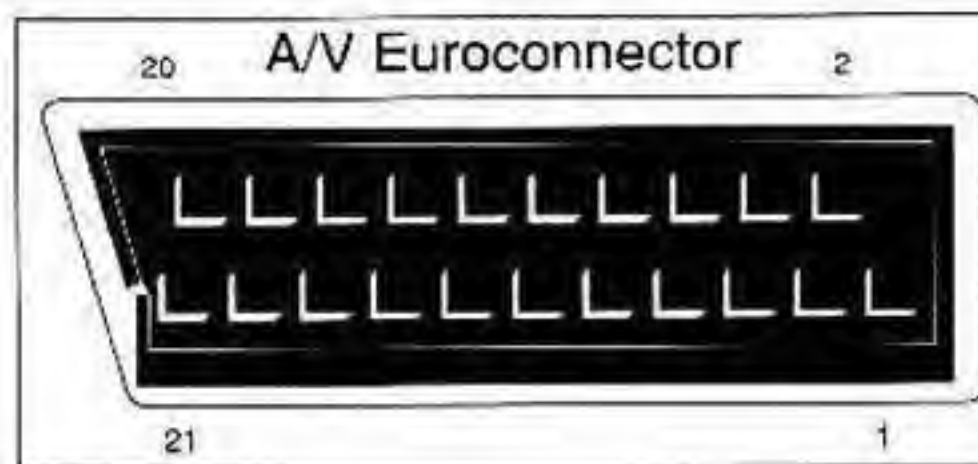
Y/C CONNECTOR



PIN SIGNAL

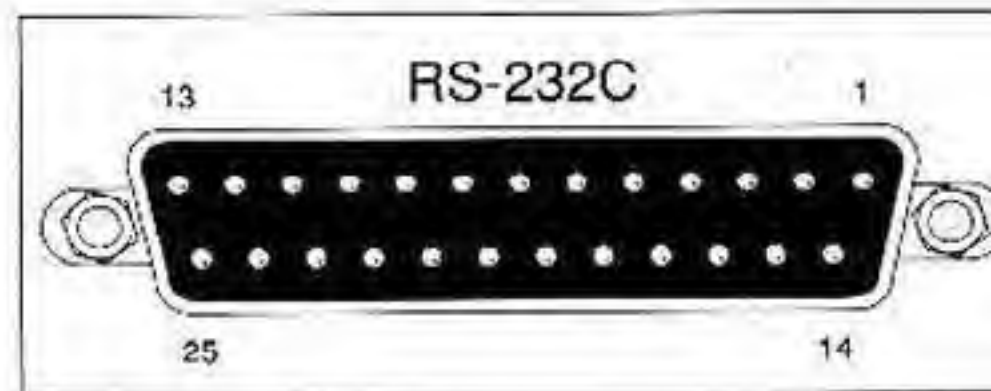
1	GND
2	GND
3	Y output
4	C output

pin	signal
1	audio out (right)
2	not connected
3	audio out (left)
4	audio earth
5	blue earth
6	not connected
7	blue out
8	disc drive status 12 V
9	green earth
10	not connected
11	green out
12	not connected
13	red earth
14	earth
15	red out
16	(fast blanking : 2.5 V into 75 ohm (RGB status))
17	OVBS earth
18	RGB status earth
19	CVBS out (also acts as sync out when using RGB)
20	not connected
21	not connected socket earth



RS232 interface

Serial computer interface, in accordance with international communication standard EIA-232-D.
Full duplex
1200/9600 baud (selectable)
8 data bits, 1 stop bit, no parity



The drive is fitted with a 25-pole female D-type connector with following pin connections :

PIN	SIGNAL
2	(T x D) transmitted data from drive to computer
3	(R x D) received data from computer to drive
5	(CTS) clear to send : a signal from computer to drive indicating the computer is ready to receive data
7	(GND) logic ground
20	(DTR) data terminal ready : a signal from drive to computer indicating the drive is ready to receive data.

Fault symptoms and possible causes

Drive remains in standby mode

- Check if transport locks have been removed.

Disc does not eject

- Check the REPLAY button.
- Check that the drive is connected to the mains supply and that the POWER indicator is lit.

Disc does not rotate

- Check that the drive is receiving power: the POWER indicator should be lit.
- Check that the disc-tray is properly closed.
- Check that the disc is properly loaded.

Disc rotates but picture is weak or absent

- Check the connection between monitor and drive.
- Check that the disc has been loaded correctly (label up) on the disc-tray. (Some discs have program content on one side only.)
- Press the [>] section of the SEARCH button.
- The drive is in the pause mode: Press the [>] section of the PLAY button.
- **VP380 only.**
If the sound is good but picture is poor (rolling/tearing/no colour) check that the disc being played is the expected television system standard (PAL/NTSC).

Drive sticks at particular point on disc

- Press the [>] section of the SEARCH button momentarily to skip over the affected part.
- Remove the disc and wipe both surfaces clean with a soft, dry cloth to remove possible opaque surface marks.

Special effects (still, slow, reverse, fast) do not function

- Check that a CAV disc is being played; when playing CLV discs, the special-effects buttons do not function.

Unstable still picture

- If still pictures taken from a fast moving scene sometimes flicker, this is no fault of the drive but results from the basic program material used for disc production.

Good picture but no sound

- Make sure that the drive is in its forward playing mode (in all other modes there is no sound).
- Check that the sound channels AUDIO 1 (left channel) and/or AUDIO 2 (right channel) are switched on.
- If an LV-ROM disc is being played, there may be data and therefore no sound on the disc. Try a non-LV-ROM disc.

Digit buttons are inoperative

- Check REPLAY button.
- Check whether the picture number or chapter number is displayed on the monitor. If not, press PNR or CNR.

Remote control does not function correctly

- Check batteries in remote control handset.
- If the drive is in the replay mode, most controls are disabled.
- Check mini jack plug is inserted correctly in the WIRED RC socket.

The drive fails to respond when under computer control

- Check baud rate and parity.
- Check the connections to the relevant interface.
- Ensure that DATA IN and DATA OUT are the right way around (RS232-C).
- Check that the DTR signal from the drive is being received by the computer (RS232-C).
- Check the CTS signal of the computer.
- To reset drive, switch the power off, wait ten seconds, switch power on.

Technical Information

Optical discs

LaserVision/Laser Disc

Disc diameter	300 mm or 200 mm
Disc thickness	2.7 mm
Disc speed	CAV disc : 1500 r.p.m. CLV disc : 1500-570 r.p.m.

Maximum capacity	
300 mm - disc	CAV disc : 54 000 pictures per side
200 mm - disc	CAV disc : 24 000 pictures per side

Max. playing time	
300 mm - disc	CAV disc : 36 minutes per side CLV disc : 1 hour per side
200 mm - disc	CAV disc : 16 minutes per side CLV disc : 24 minutes per side

Average track pitch	1.6 - 1.8 μ m
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Compact disc

Disc diameter	120 mm or 80 mm
Disc thickness	1.2 mm
Disc speed	600 - 200 r.p.m.

Maximum capacity	
120 mm disc	74 minutes
80 mm disc	26 minutes
Average track pitch	1.6 μ m

Drive

Front loading motor-powered disc-tray

startup time	
LV 300 mm :	\leq 20 sec
LV 200 mm :	\leq 14 sec
CD 120 mm :	\leq 10 sec
CD 80 mm :	\leq 10 sec
Clip 120 mm :	\leq 10 sec

unload time	
(time between Eject command and tray open)	
LV 300 mm :	\leq 9 sec
LV 200 mm :	\leq 4 sec
CD 120 mm :	\leq 3 sec
CD 80 mm :	\leq 3 sec
Clip 120 mm :	\leq 3 sec

SSL (solid state laser)

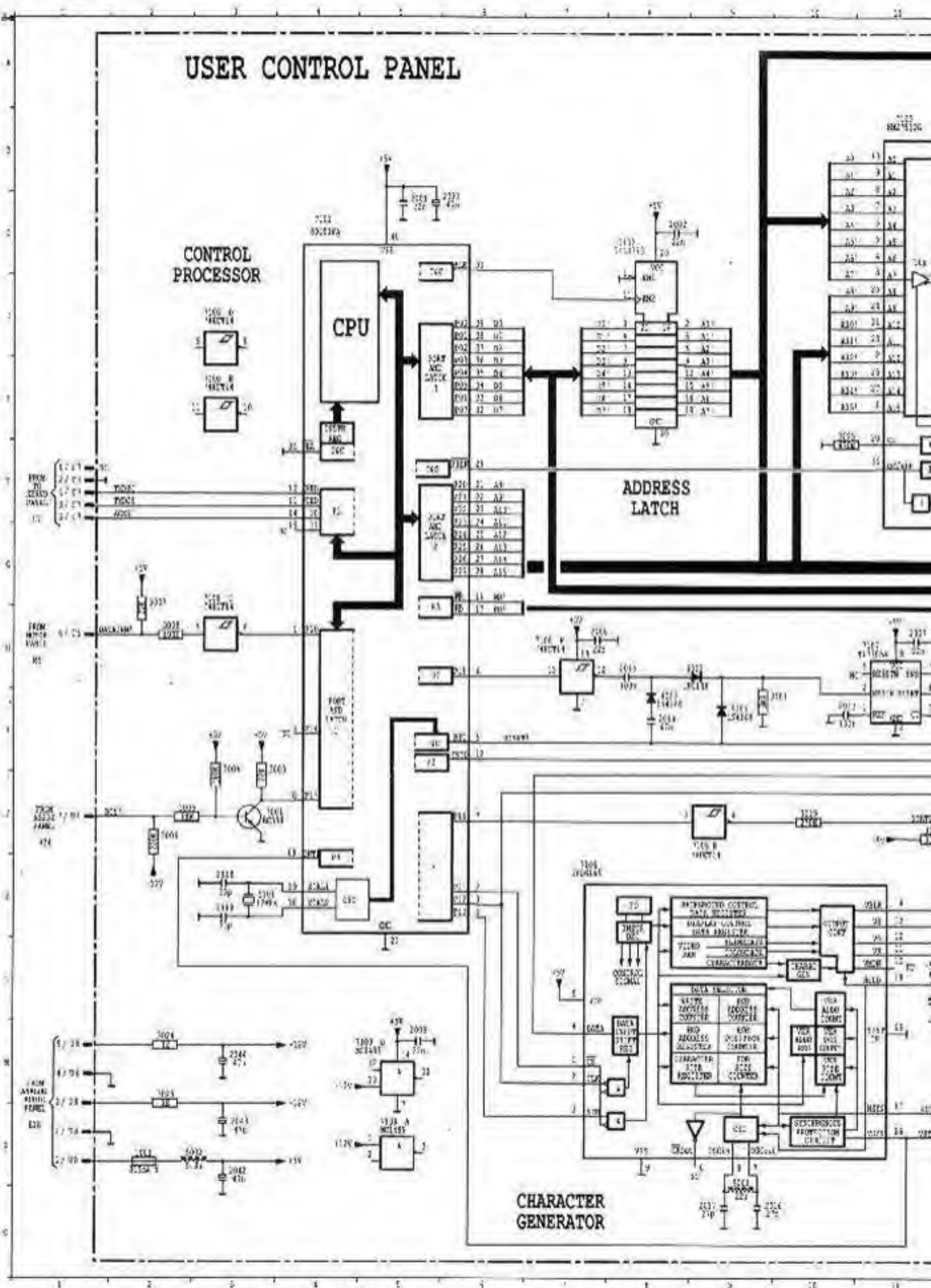
Laser type	AlGaAs semiconductor
Wavelength	780 nm
Aperture	0.5
Output of laser	$<$ 5 mW

Random access time	
CAV, 300 mm	typically 3 sec max.
CLV, 300 mm	typically 12 sec max.

On-board programming	Up to 2 x 8 picture number/time code segment and 2 x 8 chapter segments
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Capacity of on-board character display	12 lines of 24 characters each (F-C code programmable)
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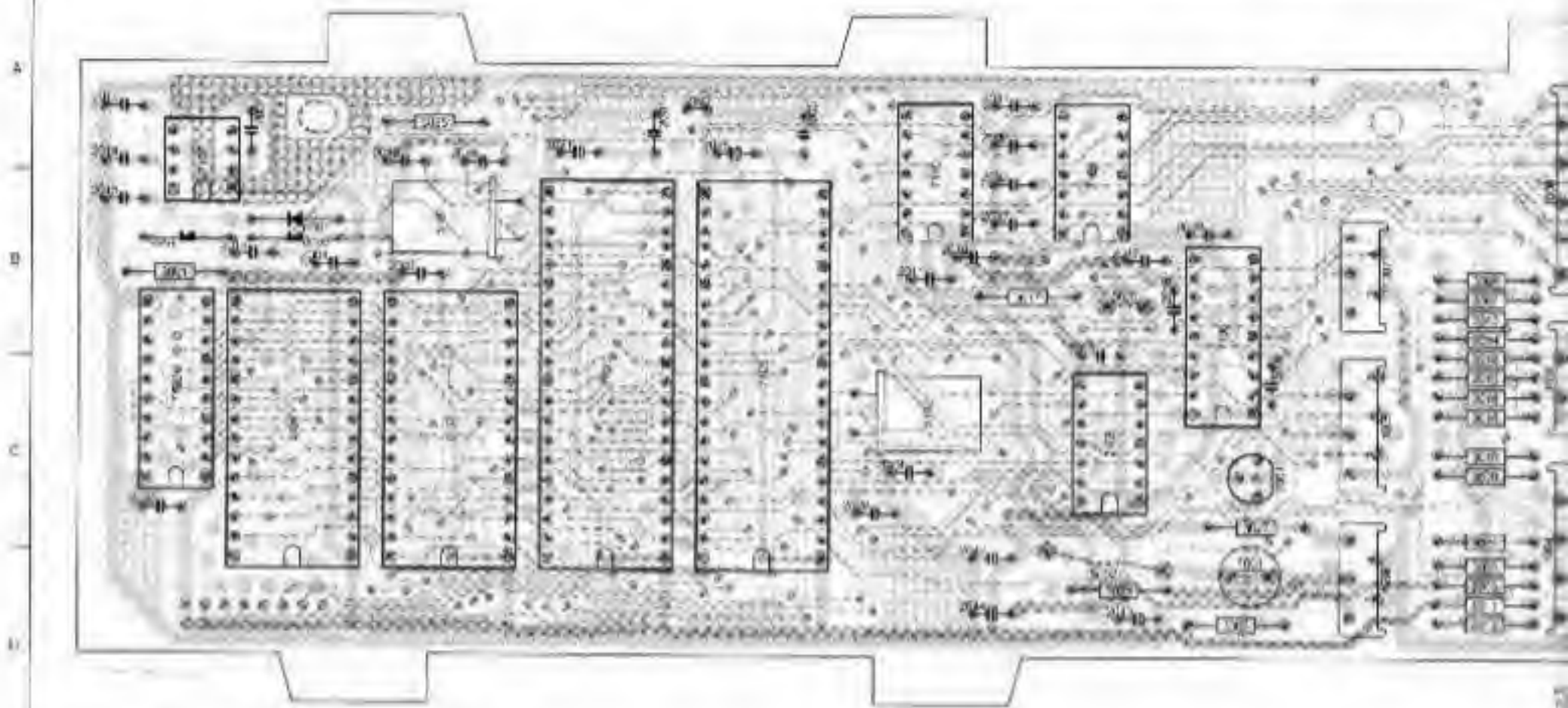
Program retention (with power off)	not retained (battery - backed memory retrofittable)
Mains voltage	220 to 240 V a.c. (\pm 10 %)
Mains frequency	50 to 60 Hz (\pm 5 %)



μProcessor lay-out

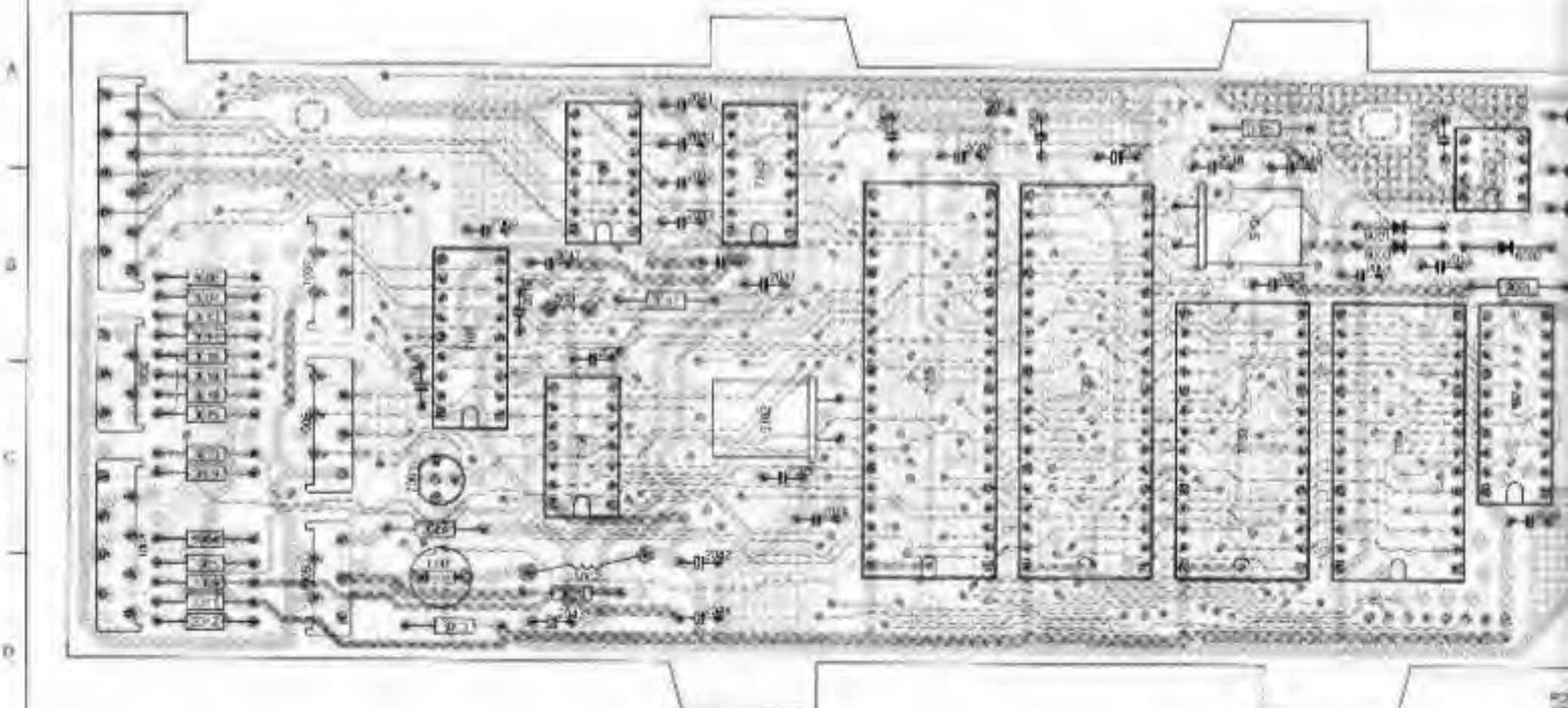
1804 D1	2002 C2	2C8D B3	2816 D5	2028 C4	8044 D4	2036 B1	3315 D7	2025 A1	8023 B7	710E D1
1804 D2	2002 C3	2C8D B4	2816 D6	2028 C5	8044 D5	2036 B2	3315 D8	2025 A2	8023 B8	710E D2
1804 D3	2002 C4	2C8D B5	2816 D7	2028 C6	8044 D6	2036 B3	3315 D9	2025 A3	8023 B9	710E D3
1804 D4	2002 C5	2C8D B6	2816 D8	2028 C7	8044 D7	2036 B4	3315 DA	2025 A4	8023 BA	710E D4
1804 D5	2002 C6	2C8D B7	2816 D9	2028 C8	8044 D8	2036 B5	3315 DB	2025 A5	8023 BB	710E D5
1804 D6	2002 C7	2C8D B8	2816 DA	2028 C9	8044 D9	2036 B6	3315 DC	2025 A6	8023 BC	710E D6
1804 D7	2002 C8	2C8D B9	2816 DB	2028 CA	8044 DA	2036 B7	3315 DD	2025 A7	8023 BD	710E D7
1804 D8	2002 C9	2C8D BA	2816 DC	2028 CB	8044 DB	2036 B8	3315 DE	2025 A8	8023 BE	710E D8
1804 D9	2002 CA	2C8D BB	2816 DD	2028 CC	8044 DC	2036 B9	3315 DF	2025 A9	8023 BF	710E D9
1804 DA	2002 CB	2C8D BC	2816 DE	2028 CD	8044 DD	2036 BA	3315 DG	2025 AA	8023 C0	710E DA

9 8 7 6 5 4 3 2 1



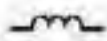





1804 D1	2002 C2	2C8D B3	2816 D5	2028 C4	8044 D4	2036 B1	3315 D7	2025 A1	8023 B7	710E D1
1804 D2	2002 C3	2C8D B4	2816 D6	2028 C5	8044 D5	2036 B2	3315 D8	2025 A2	8023 B8	710E D2
1804 D3	2002 C4	2C8D B5	2816 D7	2028 C6	8044 D6	2036 B3	3315 D9	2025 A3	8023 B9	710E D3
1804 D4	2002 C5	2C8D B6	2816 D8	2028 C7	8044 D7	2036 B4	3315 DA	2025 A4	8023 BA	710E D4
1804 D5	2002 C6	2C8D B7	2816 D9	2028 C8	8044 D8	2036 B5	3315 DB	2025 A5	8023 BB	710E D5
1804 D6	2002 C7	2C8D B8	2816 DA	2028 C9	8044 D9	2036 B6	3315 DC	2025 A6	8023 BC	710E D6
1804 D7	2002 C8	2C8D B9	2816 DB	2028 CA	8044 DA	2036 B7	3315 DD	2025 A7	8023 BD	710E D7
1804 D8	2002 C9	2C8D BA	2816 DC	2028 CB	8044 DB	2036 B8	3315 DE	2025 A8	8023 BE	710E D8
1804 D9	2002 CA	2C8D BB	2816 DD	2028 CC	8044 DC	2036 B9	3315 DF	2025 A9	8023 BF	710E D9
1804 DA	2002 CB	2C8D BC	2816 DE	2028 CD	8044 DD	2036 BA	3315 DG	2025 AA	8023 C0	710E DA

9 8 7 6 5 4 3 2 1



9 8 7 6 5 4 3 2 1

PARTSLIST μ -PROCESSOR

connectors					
1001	4822 071 53151	19372(315MA)	5001	4822 157 60032	
			5002	4822 158 10101	
			5101	4822 242 73759	12MHZ
2001 4822 122 30103 22NF80% 63V 2002 4822 122 30103 22NF80% 63V 2003 4822 122 30103 22NF80% 63V 2004 4822 122 30103 22NF80% 63V 2005 4822 122 30103 22NF80% 63V 2006 4822 122 30103 22NF80% 63V 2007 4822 122 30103 22NF80% 63V 2008 4822 122 30103 22NF80% 63V 2009 4822 122 30103 22NF80% 63V 2010 4822 122 30103 22NF80% 63V 2011 4822 122 30103 22NF80% 63V 2012 4822 124 22799 1NF 5% 250V 2013 5322 121 42386 100NF 5% 63V 2014 4822 121 43526 47NF 5% 100V 2015 5322 121 42386 100NF 5% 63V 2016 4822 122 30045 27PF 2% 100V 2017 4822 122 30045 27PF 2% 100V 2018 5322 122 32072 33PF 2019 5322 122 32072 33PF 2021 4822 124 40433 47UF20% 25V 2025 4822 124 40433 47UF20% 25V 2028 4822 122 31056 12PF 2% 100V 2029 4822 122 31056 12PF 2% 100V 2030 4822 122 32062 470PF 2% 100V 2031 4822 122 32062 470PF 2% 100V 2032 4822 122 30045 27PF 2% 100V 2033 4822 122 30045 27PF 2% 100V 2042 4822 124 40433 47UF20% 25V 2043 4822 124 40433 47UF20% 25V 2044 4822 124 40433 47UF20% 25V					
			5102	5322 242 71867	432214304370
			6001	4822 130 30621	1N4148 (UAW)
			6002	4822 130 30621	1N4148 (UAW)
			6003	4822 130 30621	1N4148 (UAW)
					
			7001	4822 130 40937	BC548B
					
			7101	4822 209 63702	80C51FA
			7102	5322 209 11118	PC74HCT373P
			7103	4822 209 63701	EPROM
			7104	4822 209 72681	UPD4364C-20L
			7105	4822 209 62498	MC2681P
			7106	4822 209 60587	UPD6145C-001
			7107	4822 209 82386	TL7705ACP
			7108	5322 209 11378	PC74HCT14P
			7109	5322 209 85619	MC1489AP
			7110	5322 209 84307	MC1488P
					
3001	4822 050 23305	3M30 1% 0,6W			
3004	4822 050 21804	180K00 1% 0,6W			
3005	4822 050 26803	68K00 1% 0,6W			
3006	4822 050 22204	220K00 1% 0,6W			
3018	4822 050 23301	330R00 1% 0,6W			
3019	4822 116 52217	270E 5% 0,5W			
3023	4822 052 10108	1R00 5% 0,33W			
3024	4822 052 10108	1R00 5% 0,33W			
3025	4822 116 52224	470E 5% 0,5W			

VIDEO SIGNAL PAHT DESCRIPTION

1.1 High frequency input

The HF-AV signal enters the video panel on connector 2V11/.

The HF-A (analog audio) leaves the video panel via buffer 7312 on connector 2V17. The amplitude of the HF-AV is 400 mV at the CAV disk-inside and 800 mV at the CAV disk outside.

The video HF is then split-up in a PAL- and NTSC branch.

The PAL-branch via buffer 7315 consists of a 1,7 MHz HPF-5304 and a double notch-filter 5311-684 kHz and 5313-1066 kHz to remove the analog audio carriers.

The NTSC-branch via buffer 7316 consists of a 3,22 MHz HPF-5300 and a double notch-filter 5308-2,3 MHz and 5316-2,8 MHz to remove the analog audio carriers.

After this a LPF of 14 MHz-5314 and 5315 for both the PAL and NTSC-signal.

1.2 Modulation transfer function

The filtered HF-video signal comes at pin 7 of 7903-A. Here the MTF takes place for PAL with 5305-8 MHz and for NTSC with 5303-10 MHz.

In 7903-B the MTF-corrected signal is amplified 8 dB.

1.3 Demodulation

In 7903-C the signal at pin 14 is demodulated.

Between pin 18 and 23 a separate LPF for PAL and NTSC takes place. For PAL via 5317-5 MHz and for NTSC via 53123-4,2 MHz 7901 is a video switch for PAL/NTSC.

In 7903-C pin 23 deemphasis takes place for PAL and NTSC. For NTSC 3387, 2387 and 3319 are switched parallel to 3333 and 2325. The AGC control will keep the video amplitude on pin 29 at 0,85 Vpp.

1.4 Drop out correction

The next part of 7903-C is the drop-out function. Drop-outs are detected in the limiter and via block D.O.D. a DRQ (data request) on pin 17 can be blocked. The data on pin 25 is for the 24-bit or manchester decoder.

On pin 48 chroma-signal is available not time base corrected. The chroma separator can be adjusted for 3,66 MHz this is the middle of 4,43 MHz (PAL) and 3,58 MHz (NTSC) with 5310 on pin 1.

Pin 2 will provide the composite sync. signal from the disk-video.

Note : 3347, 3382 and 3381 are not mounted because the feed forward servo of the time base correction is not within specification for NTSC.

7902 is the drop-out delay line. the signal at pin 6 is notched at 4,43 MHz with 5302. At pin 7 the F72 clock for NTSC (7,1 MHz is double NTSC chroma carrier) is provided. For PAL an additional delay is needed of 0,5 μ S with 5318 and 5306 switched via 7313 and 7321 because the NTSC delay time is 36,5 μ S.

The drop-out LPF 5301-3,75 MHz is to remove the clock pulse rests. The drop-out amplitude can be adjusted with 3338 for the same amplitude as for the not drop-out signal.

1.5 Time base correction

Between pin 29 of 7903-C and pin 31 of 7903-D the time base is corrected. See chapter time base correction.

5307 removes double carrier rests with a notch of 15,5 MHz.

7904 is the time base correction delay line.

5400 is a LPF of 5,9 MHz for removing the clock pulse rests.

The time base corrected video enters the 7903-D pin 31 (Part II video schematic) first the signal is controlled for a constant DC-level with 2350, then the time fault measuring the chroma and compos. sync. signals are removed from the video signal available on respectively pin 44 and 46. On pin 45 chroma separation filter can be adjusted with 5303 on 3,66 MHz.

1.6 Noise suppression

After the special burst suppression in 7903-D the noise suppression filter is located, this filter is only active via 7318 on high frequencies in the luminance signal. During teletext lines the noise suppression filter is switched off with the VWIN-signal (vertical window) on pin 36.

In NTSC the capacitor 2382 is switched to ground. 2382 and 2383 are switched parallel.

The half picture part in 7903-D is not used.

Before the video signal leaves the 7903-D the signal is amplified to a level of 1 Vpp.

1.7 Video processing

The DC-level after amplifier 7305, 7306 is 3,4V, the signal is split-in a video and a teletext signal line. In teletext the signal part under the black level is cut in 6811 and 6812 and delayed in 5681 with 400 ns and amplified in 7681 and 7682. In multiplexer 7902 the teletext lines are mixed with the CVBS-signal means of the TXT.WIN (TXT windows) and INT.VI (Internal video) with respect that no teletext is possible when the player is starting up. With the SDC2 signal (sand castle 2) the CVBS and TXT-CVBS are clamped on the black level.

The video signal line from C-7306 is split-up in a NTSC and PAL luminance/chrominance dividers. In PAL divider, the lower line in the schematic diagram part II, is the same as in the VP310 also the adjustments are the same.

In the NTSC divider first the signal is delayed one time. At pin 2 of 5513 is 180° shifted to the signal C-7511. These two signals are added to remove the sub carrier of

3,58 MHz and becomes available on e-7513, no chrominance is left here. On e-7512 only chrominance is available because the signal on 1-5513 is in phase with the signal on e-7511. Filter 5515 removes luminance rests on 3,58 MHz.

With 5514 the group delay time is corrected (minimum chrominance signal on e-7513). The flatness of the full field multi burst is adjusted with 5515 (with NTSC test disc). Filter 5516 on 3,58 MHz \pm 600 kHz is for limiting the bandwidth.

1.8 RGB decoder/encoder

The RGB multi standard decoder 7922 is adjusted for PAL in the same procedure as for the VP310 after that the specific NTSC-adjustments (HEU and 7,16 MHz loopfilter). The loopfilter on pin 24 and 25 is active for NTSC when the DC-level is low, the filter is responding on the HUE-adjustment potentiometer 3580. In NTSC the H/2 demodulator is controlled with 3559 and for PAL with 3560.

SDC1 and SDC2 (sand castle) are added to the frame pulse and feed to pin 7 of 7922.

On pin 12, 14 and 16 the characters are inserted with blanking signal on pin 9.

The RGB output of 7922 on pin 13, 15 and 17 are followed by sync. removers respectively 7601, 7602 and 7610, 7611 and 7612, 7613. After these sync. removers, the filters 5601, 5611 and 5614 will filter the double subcarrier frequency of 7,78 MHz between PAL and NTSC out.

The red and green color signals are going via potmeter 3608 and 3611 for amplitude adjustment to the encoder 7925 pin 2 and 3, the blue signal is going direct to the encoder pin 4. The encoder is functioning to the PAL standards when the Q-PAL line is high the Q-NTSC line is high on pin 7 of 7925. The Q-PAL (Quasi-PAL) will switch the 4,43 MHz subcarrier frequency from X-tall 5675 to pin 6 of 7925 when the Q-PAL signal is low. The RGB output is buffered in the IC and fed to the scart connector. The Y-output on pin 16 is going via a delay line of 270 ns to pin 18 where it is added to the chrominance signal (for PAL and NTSC) chrominance coming from pin 15 is going via a switchable filter (PAL/NTSC) to the encoder pin 17.

On pin 20 the CVBS signal is coming out and goes to the multiplexer 7926 on part II for mixing with teletext lines.

Luminance and chrominance is also going via buffers 7658 and 7651 to a separate Y/C output connector.

The composite sync. (C.S.) is coming into the encoder on pin 10 for NTSC 15734 Hz and for PAL 15625 Hz.

1.9 The time base correction

The TBC-MD 7911 IC is in the VP380 multi standard position working with a 14,32 MHz Kristal 5700 instead of the 17,7 MHz in the VP310.

The TBC-MD is normal in master mode. When a CAV disc is started up the IC is switched for a short moment to slave-mode this is to lock the video from the disc. When the disc is locked to the Ref H (Reference signal) the TBC-MD is switch to master-mode again.

The TBC-MA 7910 is switched between PAL and NTSC via NTSC-A on pin 2.

MEASUREMENTS AND ADJUSTMENTS VIDEO

1. Introduction

1.1 Required measurement equipment

The required measure equipment:

- Oscilloscope 50 MHz with TV triggering
- Frequency counter
- Color monitor with RGB and CVBS and Y/C input
- HF generator multistandard 1 KHz - 10 MHz
- Multimeter
- PAL video test disc 4822 397 30207
- NTSC Video test disc 4822 397 30244

1.2. Adjustment conditions

- When a video disk is required search for a colour bar and the player mode is 'STILL PICTURE' unless otherwise mentioned.
- Carry out adjustments after a warm-up time of 5 minutes

1.3. Adjustments when item replaced

Replace	Adjust
7903	5303, 5303, 3338, 5309

2. DC voltages measured with the multimeter

2.1. - Reference point for DC-measurements = GND on connector 1V12.

Measurement point	designation in schematic diagram	Value
connector 6V12	(+5V)	+5.30 Vdc
12 7903	TEA7650 pin 12 = +5VA	+5.18 Vdc
30 7903	TEA7650 pin 30 = +5VC	+5.13 Vdc
34 7911	TBC-MD pin 34 = +5VDD	+5.17 Vdc
24 7911	TBC-MD pin 24 = +5VE	+5.1 Vdc
6 7910	TBC-MA pin 6 = +5VH	+4.8 Vdc
19 7925	CXA1145 pin 19 = +5VH	+4.91 Vdc
20 7910	TBC-MA pin 20 = +5VN	+5.13 Vdc
1 7501	12V regulator input	+13 Vdc
3 7501	12V regulator output	+12 Vdc
1 7922	RGB decoder supply	+11.5 Vdc
8 7913	MC1458 - loopfilter	+12.4 Vdc
4 7913	MC1458 - loopfilter	-12.0 Vdc
1 7902	Drop out CCD	+9.1 Vdc
2 1900	TFU VCO/2 = ELCO 2805/+	+9.25 Vdc
7 1900	TFU VCO/7 = ELCO 2806/-	-9.25 Vdc
10 7904	Video CCD pin 10	+5.00 Vdc
13 7904	Video CCD pin 13	+4.80 Vdc
D6401/cathode	Video CCD	+5.6 Vdc
D6402/anode	Video CCD	-3.6 Vdc
1 7904	Video CCD pin 1	-3.0 Vdc
7 7904	Video CCD pin 7/Vref	+1.00 Vdc
14 7925	CXA1145 - Vref pin 14	+2.00 Vdc
C2601/+	Vref - sync.sep.	+2.14 Vdc
HUE INPUT:		
24 7922	RGB decoder in PAL-mode	9,4 Vdc
24 7922	RGB decoder in NTSC-mode	7,5 Vdc
VIDEO MUTE:		
C-7306	Video (when INTVID is low, mute)	3,4 Vdc
C-7682	Video (mute)	1,46 Vdc
RGB DECODER		
14 7920	Luminance to RGB decoder in PAL-mode	2,2 Vdc
14 7920	Luminance to RGB decoder NTSC-mode.	2,37 Vdc

3. AC voltages and signals measured with the scope

3.1 - HF-AV input measure point connect 2V11.

- CAV disc - inside 400 mV pp
- CAV disc - outside 800 mV pp.

3.2 MTF circuit

- Disconnect V11
- Apply a HF generator signal to 2V11 and GND to 3V11
- Switch the player on
- Connect 5V13 to ground (PAL-mode)
- Connect +3 volt to 6-7903
- Measure on 14 7903
- Set the HF-generator to 8 MHz/400 mV
- Adjust 5305 for max. amplitude
- Disconnect 5V13 from ground (NTSC-mode)
- Set the HF-generator to 10 MHz/400 mV
- Adjust 5303 for max. amplitude.

4. Drop out circuit

4.1 Input CCD filter

- Power off
- Inject via a capacitor of 220 nF in serial with a resistor of 3k3 a frequency of 4,433618 MHz at 3315 and 3317
- Measure on junction 3315 and 3317
- Adjust 5302 for minimum amplitude.

4.2 Drop out amplitude

- Search for drop-out on the PAL test disc
- Adjust 3338 for the drop-out amplitude has the same value as normal video
- Check on T.V. screen.

5. Synchronization signals (sync) and special burst separation

5.1 Chroma separator

- Use the scope with a 10:1 probe
- Measure via a 10 k resistor on 10-7910
- Adjust 5309 for max. amplitude.

6. Time base control

6.1 CCD pre filter 5307

- Player off
- Inject via a 220 nF capacitor a HF signal 15,5 MHz/1 Vpp on 29-7903
- Measure via a 10 K resistor on 5-7904 adjust 5307 for minimum frequency.

7. Noise filter

7.1 Adjusting noise filter 5380

- Player off
- Inject via a serial circuit of a capacitor of 220 nF and a 1K resistor to junction 3389 and 5380 a HF signal of 4,43 MHz
- Measure on 35-7903
- Adjust 5380 for minimum amplitude.

8. Oscillators

8.1. TBC MD

- Connect 5V13 to ground (PAL-mode)
- Connect 9V16 to ground (master-mode)
- Measure via a 10:1 probe on 40-7911 with a frequency counter
- Adjust 2708 for a frequency of 7.500.000 Hz \pm 5 Hz
- Connect 5V13 to +5V (NTSC-mode)
- Measure via a 10:1 probe on 40-7911 with a frequency counter
- Adjust 2705 for a frequency of 7.159.000 Hz \pm 5 Hz.

8.2. PAL-encoder

- Connect 10V16 to +5V (Q-PAL = Pal-mode)
- Measure via a 10:1 probe with a frequency counter on 8-7924
- Adjust 2675 for a frequency of $4.433.618 \text{ Hz} \pm 3 \text{ Hz}$.

9. Luminance/chrominance separators**9.1. PAL filter**

- Connect 5V13 to ground and INTVID (8V16) to ground (=mute)
- Connect the cathode of 6551 to ground
- Measure on 8-7922, the luminance input of the RGB decoder
- Adjust 5532 for minimum chrominance signal
- Measure on 4-7922, the chrominance input of the RGB decoder
- Adjust 5533 for maximum chrominance signal
- Search for a CROSS-HATCH signal on the PAL test disc and measure on 8-7922 again
- Adjust 5531 for an equal amplitude of the under and over shoots.

9.2. NTSC-Comb filter

- Connect 5V13 to +5V (NTSC-mode)
- Inject a HF signal of 3,579545 MHz/1,5V pp to C-7306
- Measure on e-7513 (lum-out)
- Adjust 3518 to minimum amplitude
- Adjust 5514 to minimum amplitude
- Repeat adjustments 3518 and 5514 until a minimum is reached
- Disconnect HF-generator
- Inject via a capacitor of $1 \mu\text{F}$ a frequency of 3,25 MHz into e-7513
- Measure on 8-7922
- Adjust 5515 for a minim amplitude
- Disconnect HF-generator
- Inject via a capacitor of $1 \mu\text{F}$ a frequency of 3,57954 MHz into e-7512
- Measure on 4-7922
- Adjust 5516 for maximum amplitude.

10. RGB-decoder (PAL)**10.1 RGB filters**

- Player off
- Inject via a resistor of 750Ω on junction 3615 and 2615 a frequency of 7,78 MHz
- Measure on 3614
- Adjust 5614 for minimum amplitude
- Repeat this procedure for : junction 3620 and 2617 measure on 3611 and adjust 5611, junction 3609 and 2606 a measure on 3608 and adjust 5601.

10.2 Brightness 3542

- Use the PAL-video test disc, search for picture number 505 (black picture)
- Measure on B-out connect 5V15
- Adjust 3542 for a black level of 2-5 mVp relative to black level during CVBS sync.

10.3 Contrast 3545

- Use the PAL-video test disc, search for picture number 405
- Measure on B-out connector 5V15
- Adjust 3545 for an amplitude of 700 mVp relative to blanking level.

10.4 Minimum chroma on white colour 3611 and 3608

- Use the PAL-video test disc, search for picture number 405
- Measure on G-out on connector 4V15 and R-out on connector 3V15
- Adjust 3611 and 3608 for the same amplitude as for B-out.

10.5 8,86 MHz oscillator

- Use the PAL-video test disc search for picture number 10.000 (red picture)
- Play mode reverse
- Adjust 2584 until no colour disturbance is visible in the upper part of the TV-screen.

10.6 PAL demodulator 3626

- Use the PAL-video test disc search for picture number 1690 (DEM-pattern)
- Measure on B-out connector 5V15.
Scope : time base $10 \mu\text{sec.div.}$ trigger on TVL on CVBS out
- Adjust 3626 for minimum amplitude jitter in the last two levels of the scope-picture.

10.7 PAL delay line 5623/5621

- Use the Pal video test disc search for picture number 250 (colour bar)
- Measure on B-out connector 5V15
- Adjust 5623 and/or 5621 for minimum amplitude jitter.

10.8 Saturation 3551

- Use Pal video test disc search for a colour bar
- Measure on B-out connector 5V15
- Adjust 3551 for equal amplitudes of the signals of the colours yellow, cyan and green.

11. RGB decoder (NTSC)**11.1 NTSC comb. filter**

- Use the NTSC-video test disc search for a colour bar
- Measure on B-out connector 5V15
- Adjust 2581 for minimum jitter in the cyan and blue colour signals
- Check the TV screen for a stable picture
- Adjust 3580 (HUE) for the right colour
- Adjust 3518 for minimum amplitude jitter
- Adjust 5514 and/or 5511 for minimum jitter
- Repeat adjustment 3518.

11.2 NTSC decoder 2581

- Play a NTSC colour bar reverse
- Adjust 2581 for minimum colour disturbances in the upper part of the TV screen.

Name: VII

Coming from: Sigma pi panel connector 13

Pin number	Name	IN/OUT	Level	Comment
1	N.C.	IN	+5V	Negative pulses from 70-200 μ s in situation off track in Still-mode not used in the VP380.
2	HF-AV	IN	800-1100 mV _{pp} on 5.5Vdc	
3	GND	IN		

Name: V12

Coming from: Power supply connector p4

Pin number	Name	IN/OUT	Level	Comment
1	GND	IN		
2	-13Vdc	IN	Ripple 150 mV _{pp}	During Play CAV
3	GND	IN		
4	+13Vdc	IN	Ripple 150 mV _{pp}	During Play CAV

Name: V13

Coming from: Servo panel connector S9

Pin number	Name	IN/OUT	Level	Comment
1	GND	IN		
2	DRQ	IN	+5V	Pulse during video line. 16-20 and 329-333. Source: BC 848b open collector with a 4k7 pull-up resistor.
3	DATA	OUT	+5V	Data pulses during DRQ. Load = input for the 24-bit decoder 21-7202.
4	RADSRVN	IN	+5V	During: out of radial tracking with Jump or Stop. Source: 31-7201 I/O Expander.
5	NTSC	IN	+5V	With NTSC disc. Source: I/O gate of the 24-bit decoder 20-7202.
6	TPI	IN	+5V	Low during off track. Source: LM393 7-7300 via resistor 4k7 and diode and 4k7 pull-up resistor.

Name: V14

Coming from: Motor panel connector M4

Pin number	Name	IN/OUT	Level	Comment
1	PHLOCK	IN	+5V	During phase lock. Source: 49-7001-4A via serie resistor 3404 (470 Ω) and capacitor 2404 (100pF) to ground.
2	GND	OUT		
3	CS1	OUT	+5V	During sync. for time base correction. Load: capacitor 2200 (100pF) to ground and via a serie resistor 3106 (470 Ω) to 53-7001.
4	HREF	OUT	+5V	During reference-pulse. In mid-position of active video line (CVBS-out). Load: capacitor 2408 (100pF) to ground and via serie resistor 3405 (470 Ω) to 52-7001.

12-4

Name: V15

Coming from: Connector panel connector CN5

Pin number	Name	IN/OUT	Level	Comment
1	CVBS	OUT	2V _{pp}	On 2Vdc. Load: approx. 2k Ω after capacitor 2003 (47 μ F).
2	GND	OUT		
3	R0	OUT	700mV _{pp}	Load: 75 Ω when monitor is connected via scart connector.
4	G0	OUT	700mV _{pp}	Load: 75 Ω when monitor is connected via scart connector.
5	B0	OUT	700mV _{pp}	Load: 75 Ω when monitor is connected via scart connector.
6	GND	OUT		

Name: V16

Coming from: μ processor panel connector U15

Pin number	Name	IN/OUT	Level	Comment
1	VBLANK	IN	+5V	During vertical blanking. Active: during video line 58-73. Source: character generator 14-7106.
2	GND	IN		
3	Ri	IN	+5V	During white characters. Source: character generator 11-7106.
4	Gi	IN	+5V	During white characters. Source: character generator 12-7106.
5	Bi	IN	+5V	During white characters. Source: character generator 13-7106.
6	HOR	OUT	+5V	Between horizontal sync. pulses. Load: character generator 17-7106.
7	VER	OUT	+5V	Between vertical sync. pulses. Load: character generator 16-7106 and 13-7101.
8	INTVID	IN	+5V	When no video mute is needed. Source: DUART 13-7105.
9	SLV/MAS	IN	+5V	In slave mode when PLOCK is LOW. Source: Duart 28-7105.
10	QPAL	IN	+5V	During CVBS out with PAL chrominance. Source: Duart 12-7105.

Name: V17

Coming from: Analog Audio panel connector B2

Pin number	Name	IN/OUT	Level	Comment
1	NTSC-A	OUT	+5V	With NTSC Disc. Source: collector BC 858b with 1k Ω resistor to ground.
2	HF-audio	OUT	60mV _{pp}	Load: HF audio level (when HF-AV = 800mV _{pp}). DC level = 2Vdc via 68 Ω resistor. Load: 47 Ω resistor and 470pF capacitor to ground after 22nF capacitor.
3	GND	OUT		
4	TBC-ERR	OUT	800mV _{pp}	DC level = 0V. Source: via 3811 (1k) from 7-7913 (opamp). Load: resistor of 15k Ω via capacitor of 22nF.

Name: V18

Coming from: Y/C connector

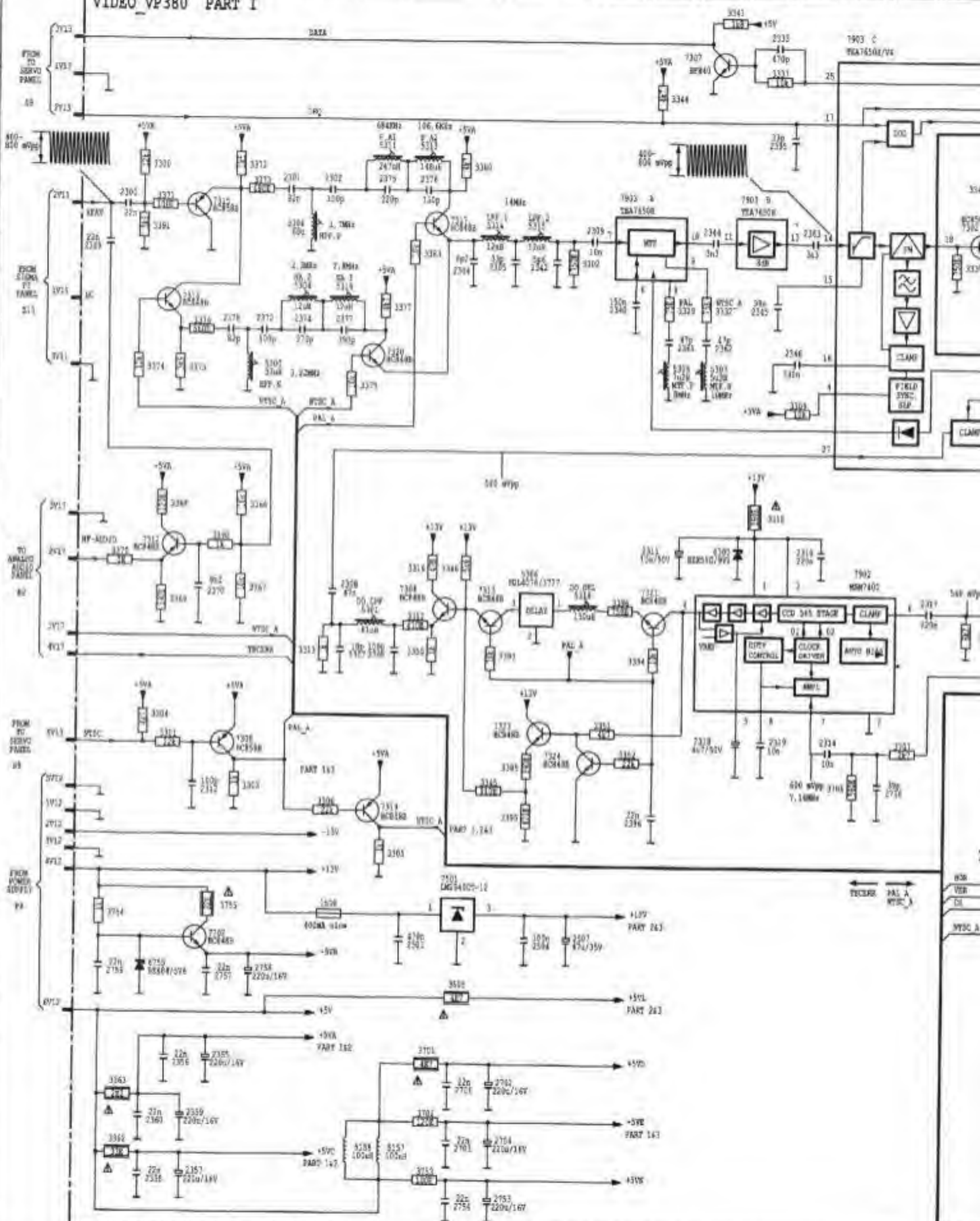
Pin number	Name	IN/OUT	Level	Comment
1	C	OUT	300mV _{pp}	Burst, when Y/C connector is terminated with 75Ω. Source: e-7652 via 3648 (68Ω).
2	GND	OUT		
3	GND	OUT		
4	Y	OUT	1V _{pp}	Luminance, when Y/C connector is terminated with 75Ω . Source: e-7659 via 3657 (68Ω).

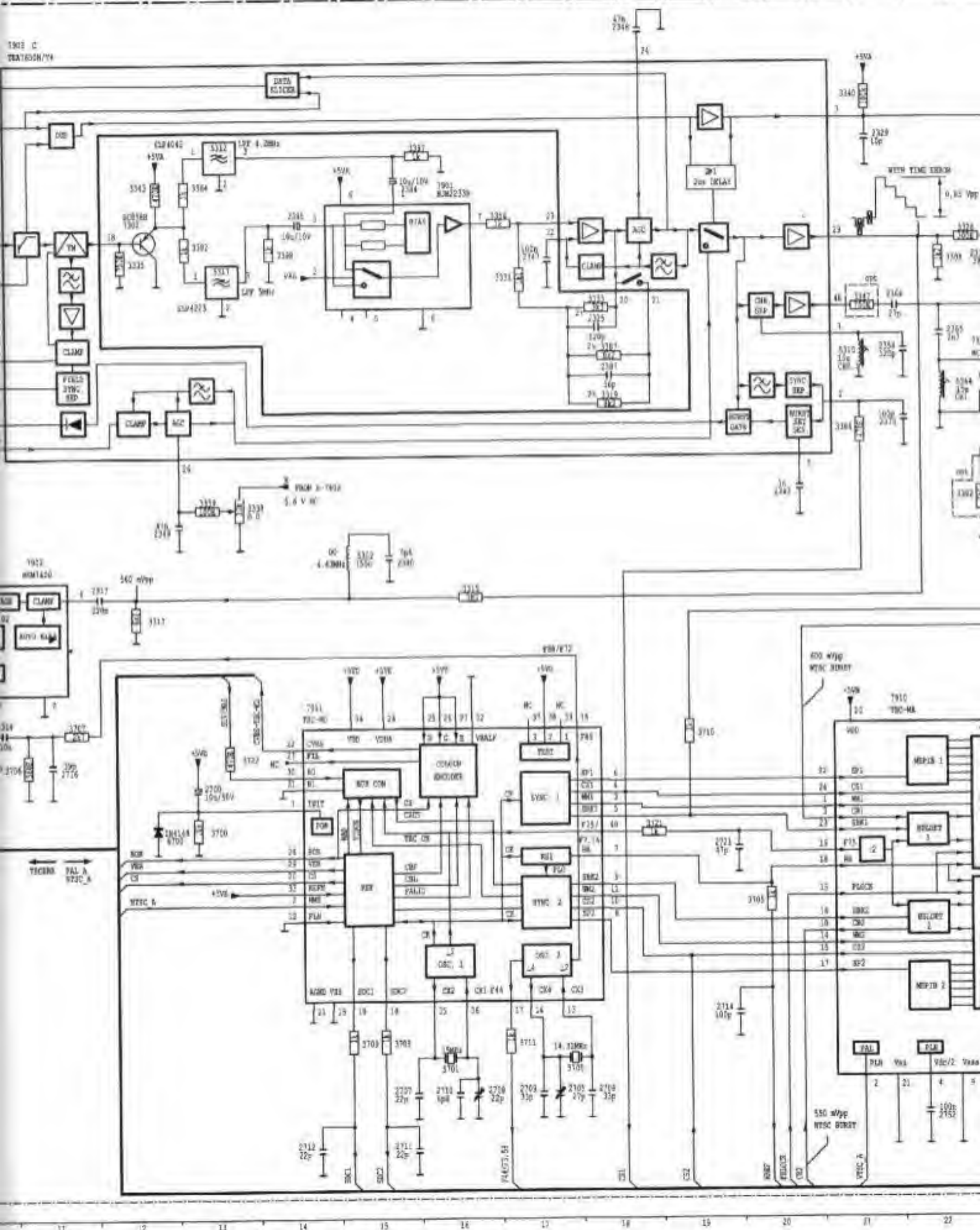
Name: V19

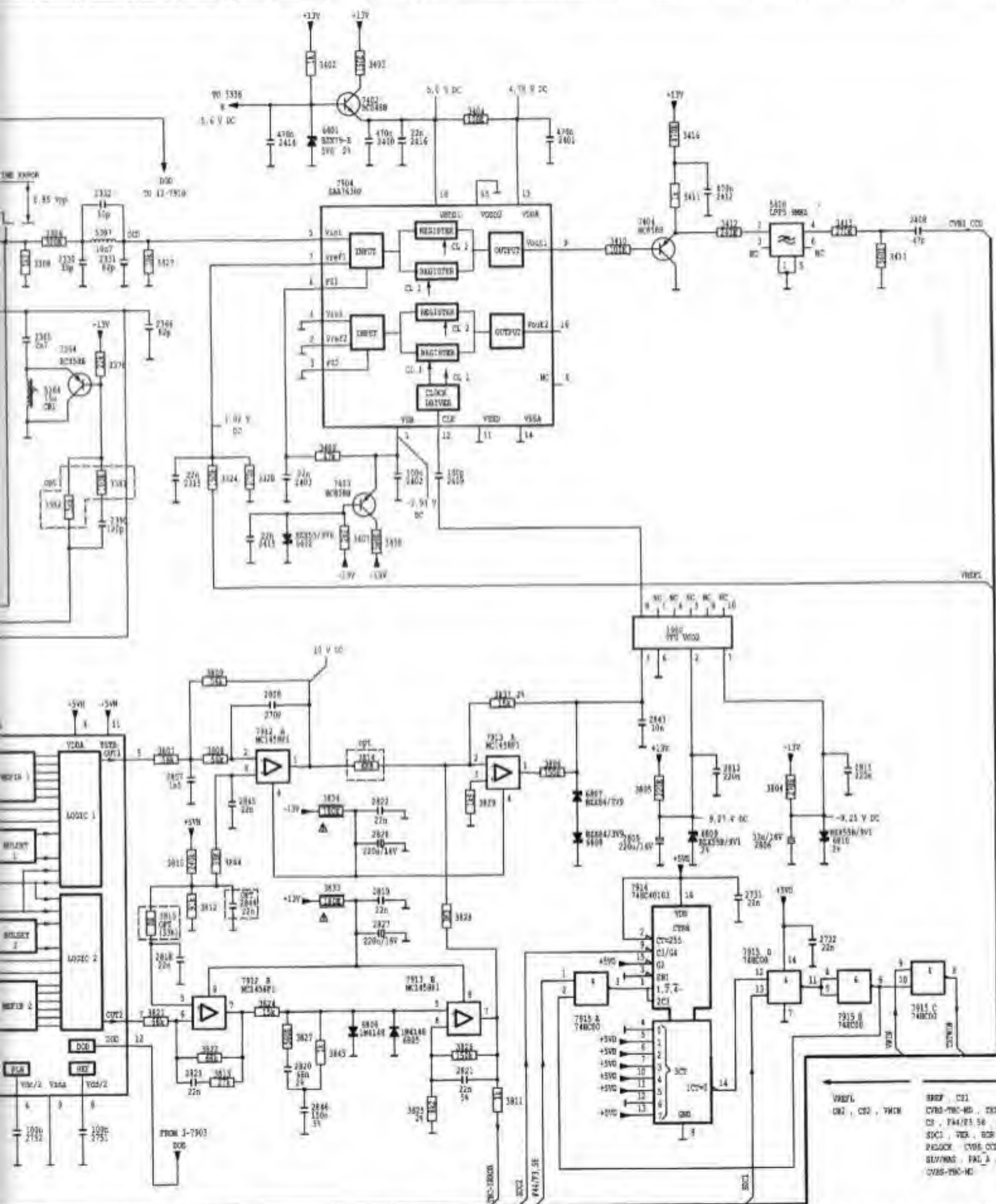
Coming from: front panel (LED's) connector K54.

Pin number	Name	IN/OUT	Level	Comment
1	5VL	OUT	+5Vdc	Supply via 3505 (4,7Ω,) non flamable resistor. Load: 2×led via 330Ω resistor.
2	GND	OUT		
3	NTSC-A	OUT	+5Vdc	With NTSC-disc. Source: +5VA via 7319 (BC858b) and 3305 (1k) to ground. Load: resistor of 33k.

VIDEO VP380 PART I

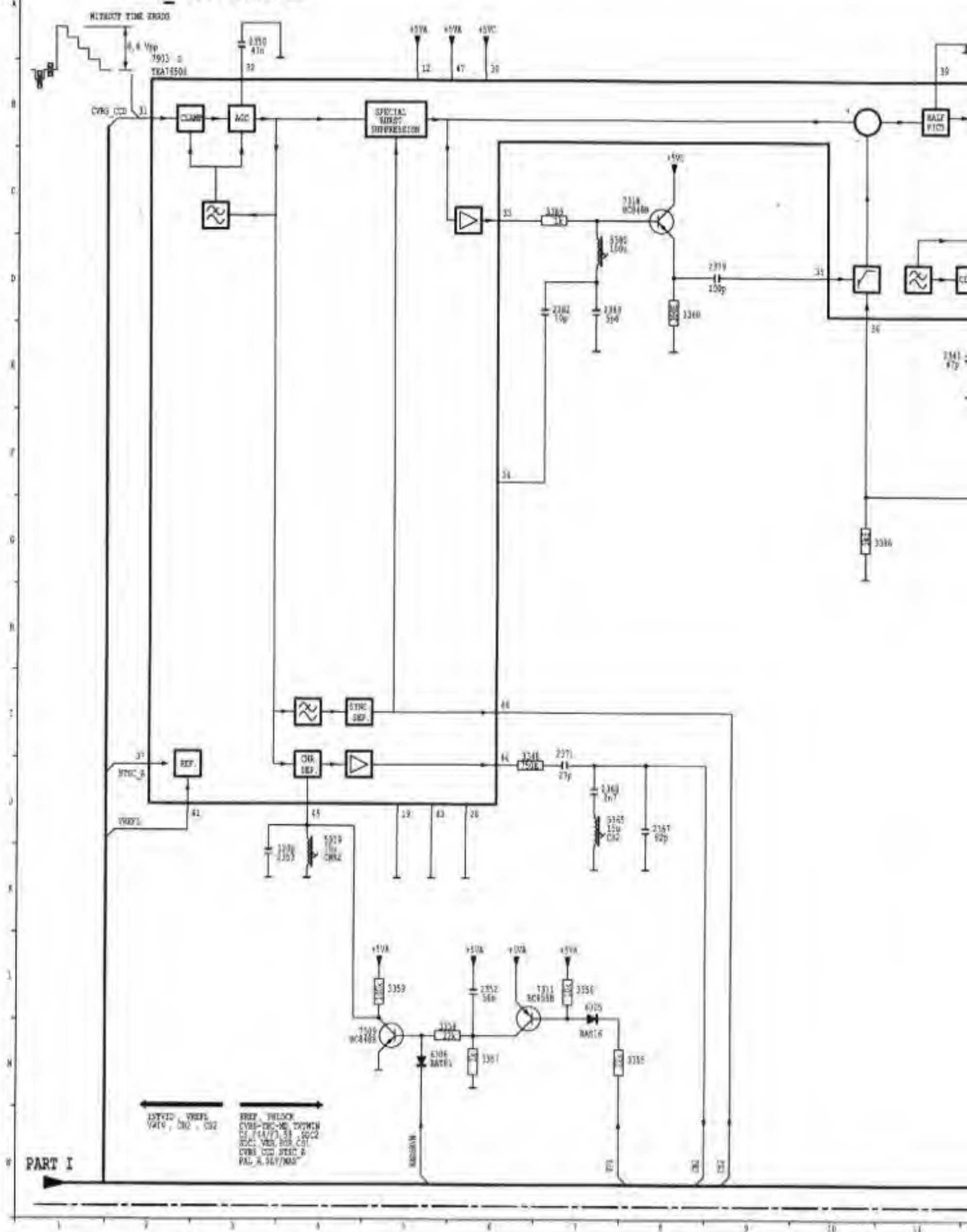


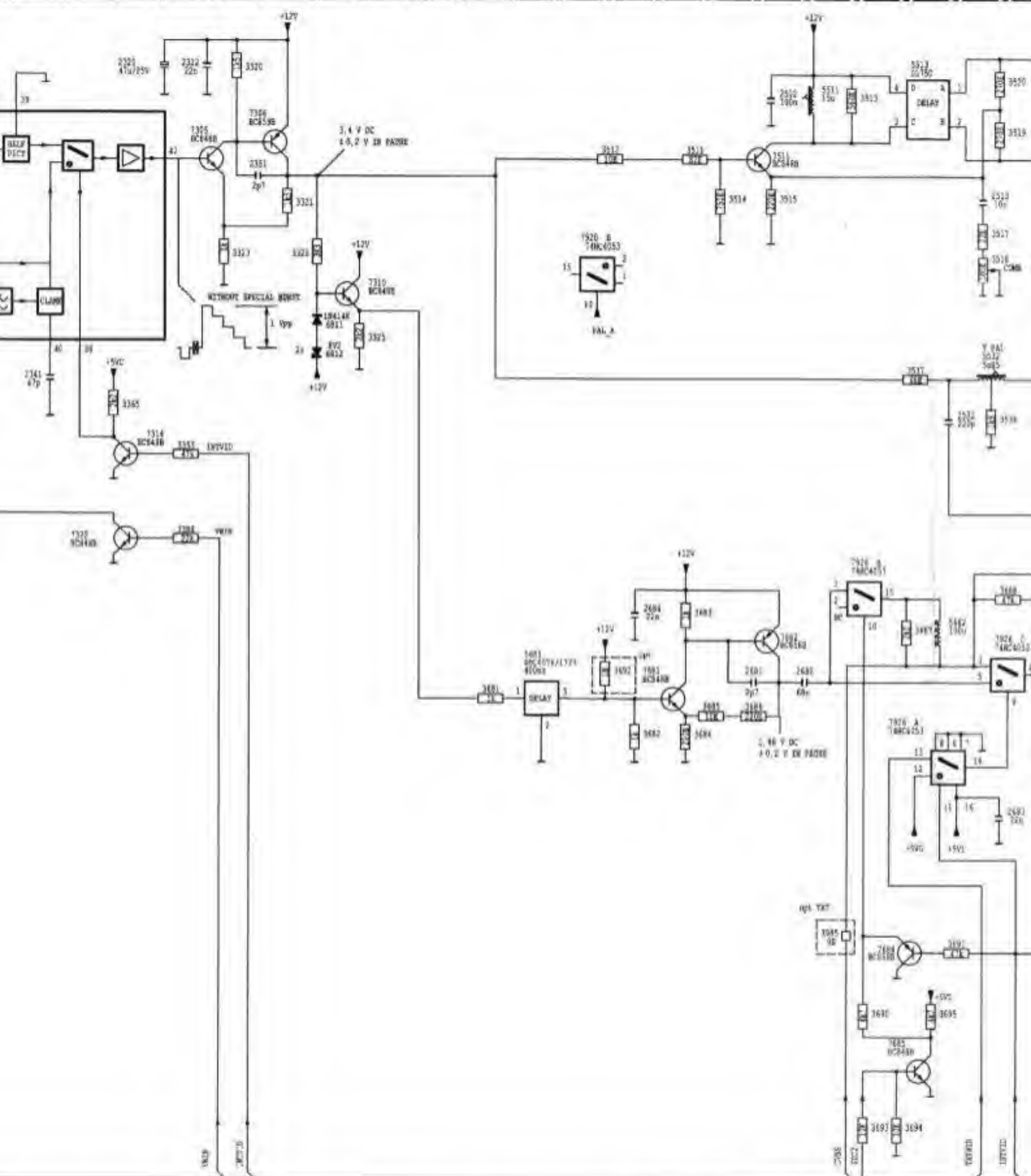


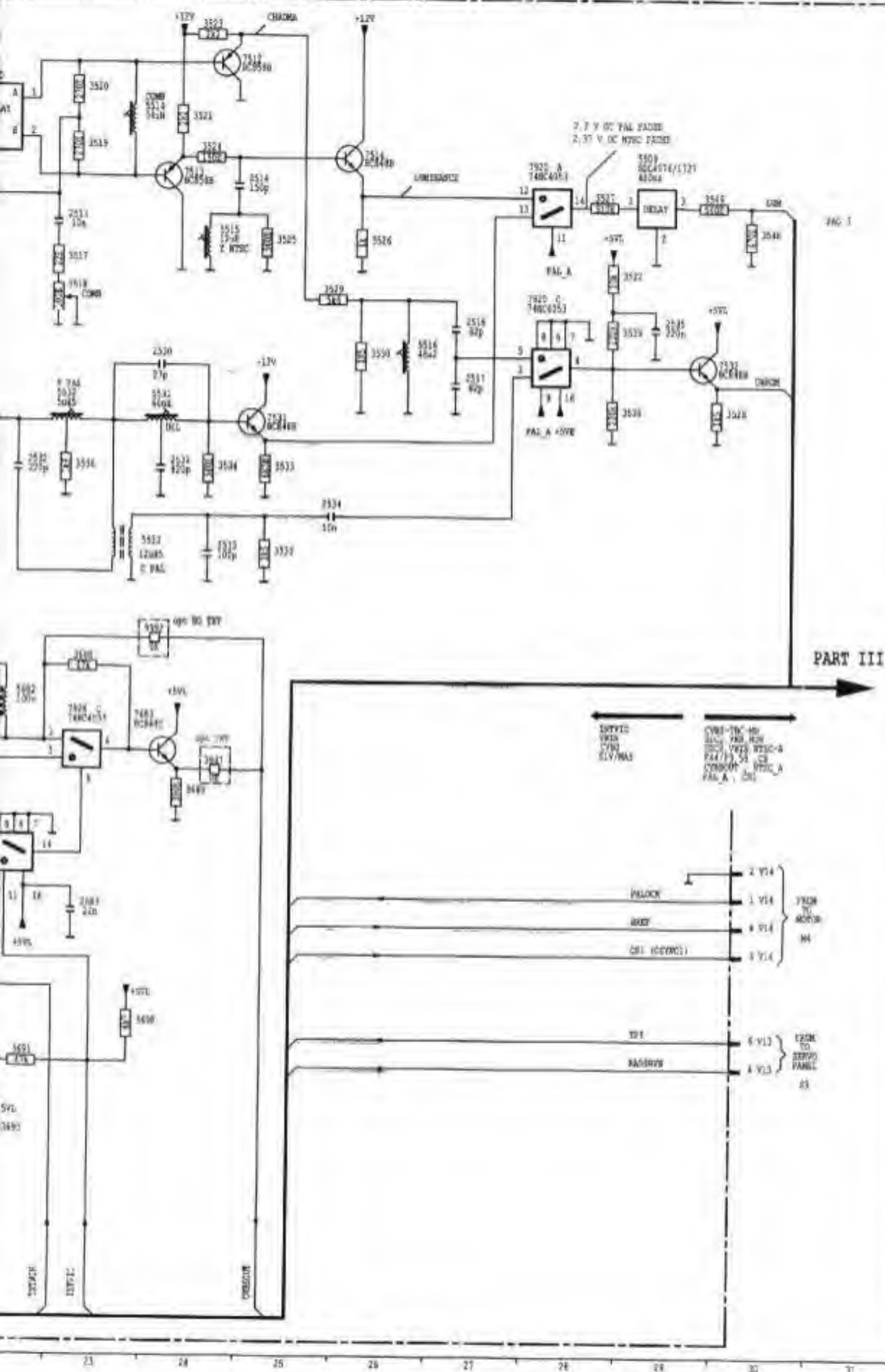


Video part II

VIDEO VP380 PART II



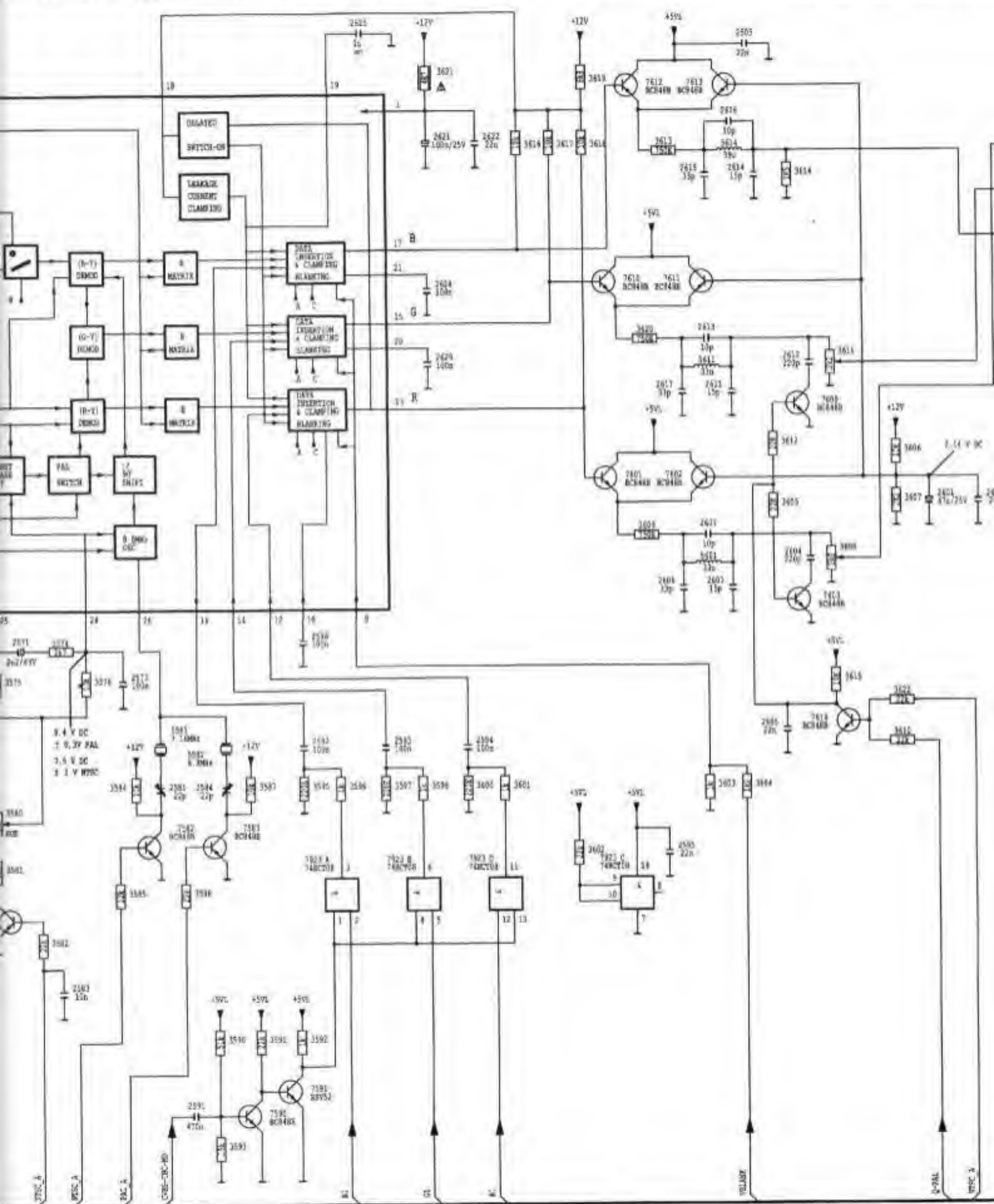


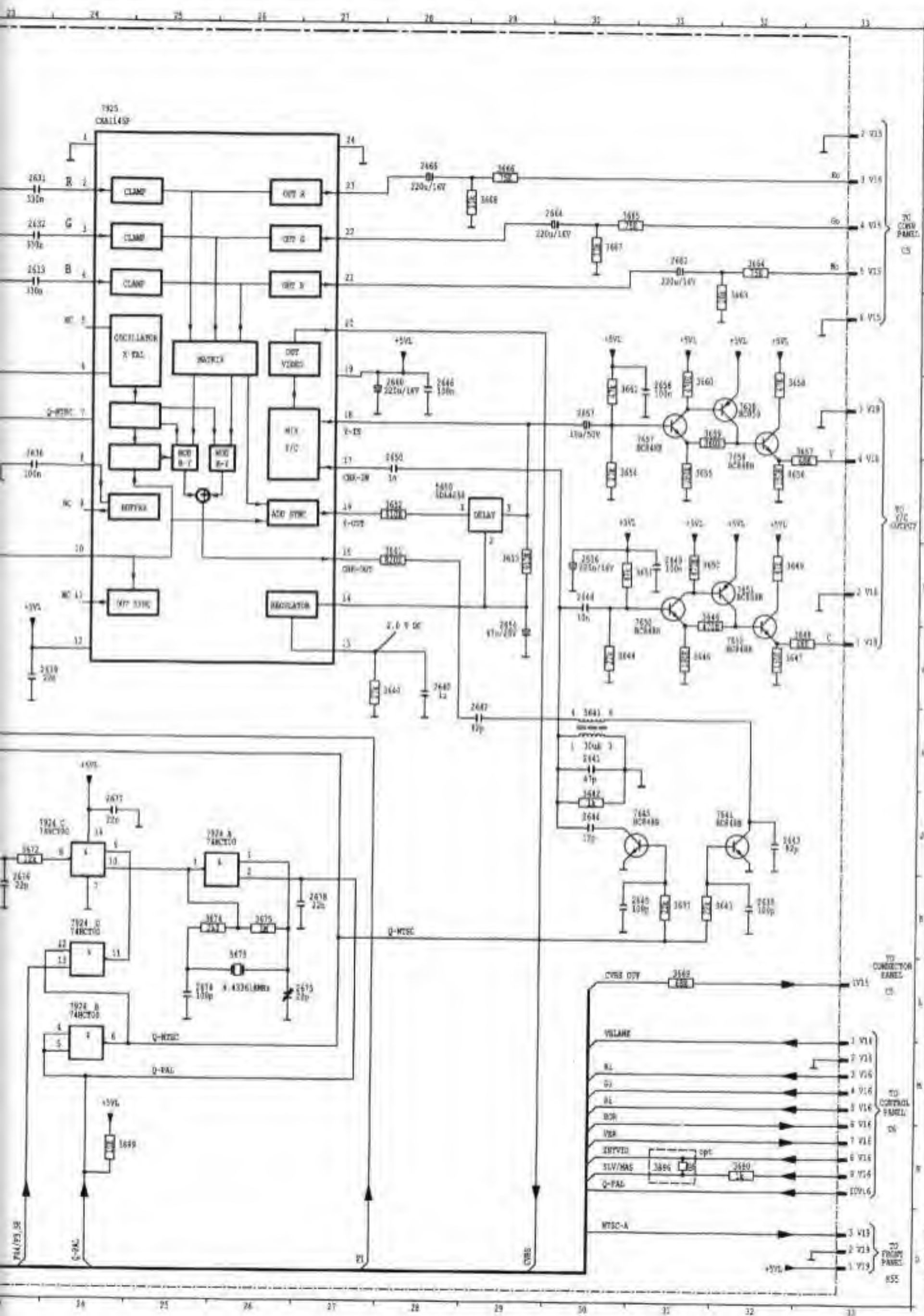


VIDEO VP380 PART III



CDSOXYT, PAL, A
 UNIN, ROR, VDR
 NYSC-A, P44/E1, 04
 DVS8-TSC-ND, C8
 SNC1, GUC2, NYSC A



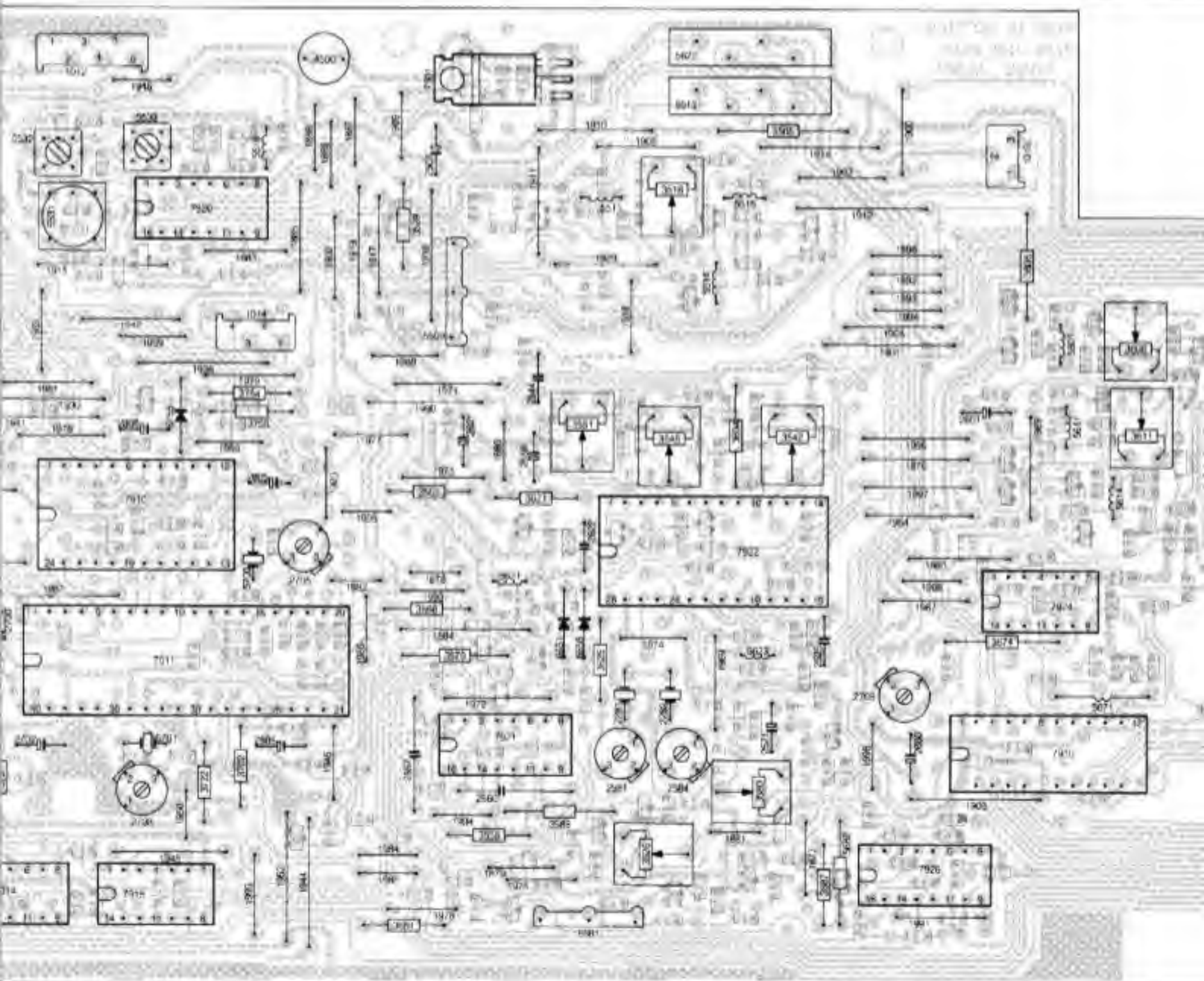


Video panel lay-out clip side

1011 F1	1883 F7	1934 E6	1991 A12	2347 C4	2400 B1	2591 F14	2649 C14	2805 D7	3327 B2	3378 F1
1012 F6	1884 C9	1935 D6	1992 C5	2348 C4	2401 B2	2592 D14	2650 C13	2805 D7	3328 B2	3378 F1
1013 F2	1885 F8	1936 D7	1994 A9	2349 D4	2402 B2	2593 F13	2651 C14	2806 B3	3329 E2	3379 E2
1014 F2	1886 D14	1937 D5	1995 D8	2350 D4	2403 B2	2594 D15	2652 C14	2807 A5	3331 C3	3378 F4
1016 F15	1887 F8	1939 D7	1996 D12	2351 E4	2408 C5	2595 F15	2653 C14	2808 B4	3332 E3	3379 E1
1017 F8	1888 F8	1940 A3	1997 D12	2352 F4	2408 B2	2596 F11	2654 B12	2809 A4	3333 C3	3380 D1
1018 B15	1889 F8	1941 D6	1998 B11	2353 E4	2412 B3	2597 D12	2655 A14	2812 A2	3338 D3	3381 F5
1019 D15	1890 B14	1942 E7	1999 A7	2354 E3	2414 B1	2598 D12	2656 B14	2818 A6	3337 F3	3382 F5
1019 F12	1891 D15	1943 A1	2001 B10	2355 D1	2415 D1	2603 D13	2657 B14	2819 A3	3338 C4	3383 D2
1850 B5	1892 E11	1944 A8	2002 F1	2356 D1	2418 B2	2604 D13	2674 B12	2820 B4	3339 D4	3384 F5
1851 C1	1893 E11	1945 B8	2003 E1	2357 D4	2501 F9	2605 D13	2675 B13	2821 A3	3340 A3	3385 D2
1852 F6	1894 E12	1946 F7	2004 F10	2358 D4	2504 F10	2606 E13	2677 C12	2822 B4	3341 F3	3386 D4
1853 D4	1895 E14	1948 A7	2005 E1	2359 F4	2505 C13	2607 D12	2678 C12	2827 A3	3343 F3	3387 D3
1854 B4	1896 E11	1950 A7	2006 D2	2360 L3	2506 D15	2611 D13	2681 A11	2828 A3	3344 E3	3388 D4
1855 F2	1898 C15	1952 A8	2007 D2	2361 L2	2507 F9	2612 D12	2682 A11	2829 A4	3345 D3	3389 C4
1856 C3	1899 D15	1953 D7	2008 B5	2362 L2	2510 E10	2613 D13	2683 A12	2834 A2	3346 D1	3390 F2
1857 B4	1900 F12	1954 D5	2009 B4	2363 D3	2513 E10	2614 D13	2684 A9	2844 A5	3347 F4	3391 F1
1858 C2	1901 D11	1956 C11	2010 B4	2364 F8	2514 E10	2615 D13	2685 A9	2845 A5	3348 F4	3392 D3
1859 C3	1902 F8	1958 D12	2011 B2	2365 F5	2516 F7	2616 D13	2686 A9	2846 B4	3350 D2	3393 D1
1860 D4	1903 F11	1961 C12	2012 C1	2366 F5	2517 F7	2617 D13	2687 A9	2847 F1	3351 D2	3394 D2
1861 B1	1904 D15	1962 C12	2013 C2	2367 F5	2520 F8	2621 D13	2688 A9	2848 F1	3352 D2	3395 D1
1862 B2	1905 L11	1963 B10	2014 C2	2368 F5	2521 L8	2622 C16	2689 A9	2849 D8	3353 E2	3396 C2
1863 L1	1907 D14	1971 D9	2015 C1	2369 F2	2522 F8	2623 F17	2690 B10	2850 D7	3354 D2	3397 D3
1864 C1	1908 F10	1972 B9	2016 B2	2370 F2	2523 F7	2624 B10	2691 B5	2851 B5	3355 F2	3398 C3
1865 C4	1909 F8	1973 D9	2017 C1	2371 F1	2524 F7	2625 C9	2692 B5	2852 B5	3356 F2	3399 D3
1866 D6	1910 F16	1974 C10	2018 C2	2372 L1	2525 F9	2626 C9	2693 B5	2853 B5	3357 F2	3400 B1
1867 E2	1911 E5	1975 A9	2019 C1	2373 L5	2526 D11	2627 C9	2694 B5	2854 B5	3358 F2	3401 B1
1868 F1	1912 E11	1976 A9	2020 F4	2374 L1	2527 D10	2628 C9	2695 B5	2855 B5	3359 F2	3402 B1
1869 F4	1913 F14	1977 D8	2021 F5	2375 L1	2528 D10	2629 C9	2696 B5	2856 B5	3360 F2	3403 B1
1870 F4	1914 F11	1978 D8	2022 C9	2376 L1	2529 D9	2630 C9	2697 B5	2857 B5	3361 F2	3404 B1
1871 F8	1915 F6	1979 D7	2023 C9	2377 L1	2530 D9	2631 C9	2698 B5	2858 B5	3362 F2	3405 B1
1872 D4	1916 F9	1980 C12	2024 B2	2378 L1	2531 B8	2632 C9	2699 B5	2859 B5	3363 F2	3406 B1
1873 F4	1917 L6	1981 D6	2025 B2	2379 C4	2532 B8	2633 C9	2700 B5	2860 B5	3364 F2	3407 B1
1874 C5	1918 L10	1982 C6	2026 C2	2380 C9	2533 B8	2634 C9	2701 B5	2861 B5	3365 F2	3408 B1
1875 D5	1919 E8	1983 C5	2027 E3	2381 C4	2534 B8	2635 C9	2702 B5	2862 B5	3366 F2	3409 B1
1876 D12	1920 L10	1984 A8	2028 E3	2382 C4	2535 B8	2636 C9	2703 B5	2863 B5	3367 F2	3410 B1
1877 A11	1921 B5	1985 A8	2029 C4	2383 C4	2536 B8	2637 C9	2704 B5	2864 B5	3368 F2	3411 B1
1878 C9	1922 D8	1986 B8	2030 C2	2384 C2	2537 B8	2638 C9	2705 B5	2865 B5	3369 F2	3412 B1
1879 A9	1923 D6	1987 C6	2031 C2	2385 C2	2538 B8	2639 C9	2706 B5	2866 B5	3370 F2	3413 B1
1880 D9	1924 B5	1988 D8	2032 C2	2386 C2	2539 B8	2640 C9	2707 B5	2867 B5	3371 F2	3414 B1
1881 A10	1925 D8	1989 D12	2033 C2	2387 C2	2540 B8	2641 C9	2708 B5	2868 B5	3372 F2	3415 B1
1882 C8	1926 D8	1990 D8	2034 C2	2388 C2	2541 B8	2642 C9	2709 B5	2869 B5	3373 F2	3416 B1
1883 C8	1927 D8	1991 D8	2035 C2	2389 C2	2542 B8	2643 C9	2710 B5	2870 B5	3374 F2	3417 B1
1884 C8	1928 D8	1992 D8	2036 C2	2390 C2	2543 B8	2644 C9	2711 B5	2871 B5	3375 F2	3418 B1
1885 C8	1929 D8	1993 D8	2037 C2	2391 C2	2544 B8	2645 C9	2712 B5	2872 B5	3376 F2	3419 B1
1886 C8	1930 D8	1994 D8	2038 C2	2392 C2	2545 B8	2646 C9	2713 B5	2873 B5	3377 F2	3420 B1
1887 C8	1931 D8	1995 D8	2039 C2	2393 C2	2546 B8	2647 C9	2714 B5	2874 B5	3378 F2	3421 B1
1888 C8	1932 D8	1996 D8	2040 C2	2394 C2	2547 B8	2648 C9	2715 B5	2875 B5	3379 F2	3422 B1
1889 C8	1933 D8	1997 D8	2041 C2	2395 C2	2548 B8	2649 C9	2716 B5	2876 B5	3380 F2	3423 B1
1890 C8	1934 D8	1998 D8	2042 C2	2396 C2	2549 B8	2650 C9	2717 B5	2877 B5	3381 F2	3424 B1
1891 C8	1935 D8	1999 D8	2043 C2	2397 C2	2550 B8	2651 C9	2718 B5	2878 B5	3382 F2	3425 B1
1892 C8	1936 D8	2000 D8	2044 C2	2398 C2	2551 B8	2652 C9	2719 B5	2879 B5	3383 F2	3426 B1
1893 C8	1937 D8	2001 D8	2045 C2	2399 C2	2552 B8	2653 C9	2720 B5	2880 B5	3384 F2	3427 B1
1894 C8	1938 D8	2002 D8	2046 C2	2400 C2	2553 B8	2654 C9	2721 B5	2881 B5	3385 F2	3428 B1
1895 C8	1939 D8	2003 D8	2047 C2	2401 C2	2554 B8	2655 C9	2722 B5	2882 B5	3386 F2	3429 B1
1896 C8	1940 D8	2004 D8	2048 C2	2402 C2	2555 B8	2656 C9	2723 B5	2883 B5	3387 F2	3430 B1
1897 C8	1941 D8	2005 D8	2049 C2	2403 C2	2556 B8	2657 C9	2724 B5	2884 B5	3388 F2	3431 B1
1898 C8	1942 D8	2006 D8	2050 C2	2404 C2	2557 B8	2658 C9	2725 B5	2885 B5	3389 F2	3432 B1
1899 C8	1943 D8	2007 D8	2051 C2	2405 C2	2558 B8	2659 C9	2726 B5	2886 B5	3390 F2	3433 B1
1900 C8	1944 D8	2008 D8	2052 C2	2406 C2	2559 B8	2660 C9	2727 B5	2887 B5	3391 F2	3434 B1
1901 C8	1945 D8	2009 D8	2053 C2	2407 C2	2560 B8	2661 C9	2728 B5	2888 B5	3392 F2	3435 B1
1902 C8	1946 D8	2010 D8	2054 C2	2408 C2	2561 B8	2662 C9	2729 B5	2889 B5	3393 F2	3436 B1
1903 C8	1947 D8	2011 D8	2055 C2	2409 C2	2562 B8	2663 C9	2730 B5	2890 B5	3394 F2	3437 B1
1904 C8	1948 D8	2012 D8	2056 C2	2410 C2	2563 B8	2664 C9	2731 B5	2891 B5	3395 F2	3438 B1
1905 C8	1949 D8	2013 D8	2057 C2	2411 C2	2564 B8	2665 C9	2732 B5	2892 B5	3396 F2	3439 B1
1906 C8	1950 D8	2014 D8	2058 C2	2412 C2	2565 B8	2666 C9	2733 B5	2893 B5	3397 F2	3440 B1
1907 C8	1951 D8	2015 D8	2059 C2	2413 C2	2566 B8	2667 C9	2734 B5	2894 B5	3398 F2	3441 B1
1908 C8	1952 D8	2016 D8	2060 C2	2414 C2	2567 B8	2668 C9	2735 B5	2895 B5	3399 F2	3442 B1
1909 C8	1953 D8	2017 D8	2061 C2	2415 C2	2568 B8	2669 C9	2736 B5	2896 B5	3400 F2	3443 B1
1910 C8	1954 D8	2018 D8	2062 C2	2416 C2	2569 B8	2670 C9	2737 B5	2897 B5	3401 F2	3444 B1
1911 C8	1955 D8	2019 D8	2063 C2	2417 C2	2570 B8	2671 C9	2738 B5	2898 B5	3402 F2	3445 B1
1912 C8	1956 D8	2020 D8	2064 C2	2418 C2	2571 B8	2672 C9	2739 B5	2899 B5	3403 F2	3446 B1
1913 C8	1957 D8	2021 D8	2065 C2	2419 C2	2572 B8	2673 C9	2740 B5	2900 B5	3404 F2	3447 B1
1914 C8	1958 D8	2022 D8	2066 C2	2420 C2	2573 B8	2674 C9	2741 B5	2901 B5	3405 F2	3448 B1
1915 C8	1959 D8	2023 D8	2067 C2	2421 C2	2574 B8	2675 C9	2742 B5	2902 B5	3406 F2	3449 B1
1916 C8	1960 D8	2024 D8	2068 C2	2422 C2	2575 B8	2676 C9	2743 B5	2903 B5	3407 F2	3450 B1
1917 C8	1961 D8	2025 D8	2069 C2	2423 C2	2576 B8	2677 C9	2744 B5	2904 B5	3408 F2	3451 B1
1918 C8	1962 D8	2026 D8	2070 C2	2424 C2	2577 B8	2678 C9	2745 B5	2905 B5	3409 F2	3452 B1
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1921 C8	1965 D8	2029 D8	2073 C2	2427 C2	2580 B8	2681 C9	2748 B5	2908 B5	3412 F2	3455 B1
1922 C8	1966 D8	2030 D8	2074 C2	2428 C2	2581 B8	2682 C9	2749 B5	2909 B5	3413 F2	3456 B1
1923 C8	1967 D8	2031 D8	2075 C2	2429 C2	2582 B8	2683 C9	2750 B5	2910 B5	3414 F2	3457 B1
1924 C8	1968 D8	2032 D8	2076 C2	2430 C2	2583 B8	2684 C9	2751 B5	2911 B5	3415 F2	3458 B1
1925 C8	1969 D8	2033 D8	2077 C2	2431 C2	2584 B8	2685 C9	2752 B5	2912 B5	3416 F2	3459 B1
1926 C8	1970 D8	2034 D8	2078 C2	2432 C2	2585 B8	2686 C9	2753 B5	2913 B5	3417 F2	3460 B1
1927 C8	1971 D8	2035 D8	2079 C2	2433 C2	2586 B8	2687 C9	2754 B5	2914 B5	3418 F2	3461 B1
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1929 C8	1973 D8	2037 D8	2081 C2	2435 C2	2588 B8	2689 C9	2756 B5	2916 B5	3420 F2	3463 B1
1930 C8	1974 D8	2038 D8	2082 C2	2436 C2	2589 B8	2690 C9	2757 B5	2917 B5	3421 F2	3464 B1
1931 C8	1975 D8	2039 D8	2083 C2	2437 C2	2590 B8	2691 C9	2758 B5	2918 B5	3422 F2	3465 B1
1932 C8	1976 D8	2040 D8	2084 C2	2438 C2	2591 B8	2692 C9	2759 B5	2919 B5	3423 F2	3466 B1
1933 C8	1977 D8	2041 D8	2085 C2	2439 C2	2592 B8	2693 C9	2760 B5	2920 B5	3424 F2	3467 B1
1934 C8	1978 D8	2042 D8	2086 C2	2440 C2	2593 B8	2694 C9	2761 B5	2921 B5	3425 F2	3468 B1
1935 C8	1979 D8	2043 D8	2087 C2	2441 C2	2594 B8	2695 C9	2762 B5	2922 B5	3426 F2	3469 B1
1936 C8	1980 D8	2044 D8	2088 C2	2442 C2	2595 B8	2696 C9	2763 B5	2923 B5	3427 F2	3470 B1
1937 C8	1981 D8	2045 D8	2089 C2	2443 C2	2596 B8	2697 C9	2764 B5	2924 B		

3375 F1	3518 E10	3564 A8	3613 D13	3667 B15	3801 B5	3872 E3	3918 F7	3974 A12	5380 C4	7304 D2	7591 F15
3376 F1	3519 E10	3565 C8	3614 D13	3668 A15	3808 A5	3873 D2	3919 A8	3975 A8	5389 C9	7305 E4	7601 D12
3377 L2	3520 E10	3566 B9	3615 D13	3669 A15	3809 B5	3874 E2	3920 E8	3976 D9	5511 E10	7306 E5	7602 E13
3378 F4	3521 E10	3567 C9	3616 C11	3671 B13	3810 A5	3875 F2	3921 E8	3978 D10	5513 F10	7307 F3	7603 E13
3379 L1	3522 F0	3568 C8	3617 D11	3672 B13	3811 A3	3876 F1	3922 F10	3979 B11	5514 E10	7308 D2	7609 D13
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3381 F5	3524 E10	3570 B8	3619 D10	3675 C12	3813 A4	3878 E5	3924 C13	3981 C13	5516 F8	7310 D5	7611 D12
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3387 D3	3530 L8	3578 D11	3627 C9	3685 A10	3825 A4	3884 D2	3935 A6	3988 A10	5614 C13	7316 F1	7650 C14
3388 D4	3531 L8	3580 B11	3628 B11	3686 A11	3826 A4	3885 B4	3936 C6	3989 C13	5621 C9	7317 D1	7651 C15
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3390 F2	3533 F7	3582 B11	3637 B15	3688 A11	3828 A3	3887 B6	3938 C8	3994 C13	5623 C11	7319 D1	7657 D14
3391 F1	3534 F6	3584 A9	3640 B14	3689 A12	3829 B3	3888 E4	3939 C7	3997 A2	5641 C15	7320 D1	7658 D14
3392 L3	3537 F7	3585 A10	3641 C14	3690 A12	3833 A1	3889 E4	3940 D8	3998 A4	5650 A14	7321 C1	7659 D14
3393 D1	3538 F8	3587 B10	3642 C15	3691 A12	3834 A1	3890 C15	3941 B5	4000 F8	5671 B13	7322 D4	7661 A10
3394 D2	3539 F9	3588 A5	3643 B15	3692 A10	3837 B3	3891 D4	3942 A5	5157 B6	5682 A11	7323 C2	7662 A11
3395 D1	3541 D11	3590 F15	3644 C14	3693 A9	3844 A5	3895 E15	3943 A3	5158 B6	5700 C7	7324 C2	7663 A11
3396 C2	3542 D11	3591 F14	3645 C14	3694 A9	3845 A4	3896 F18	3944 B8	5300 E1	5701 B7	7325 F5	7664 A12
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3402 B1	3545 D10	3595 E14	3648 C15	3699 C12	3853 F5	3899 C13	3947 A7	5303 E2	6306 F3	7404 B3	7777 D3
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3411 D2	3553 B3	3602 E14	3655 D14	3708 C8	3860 D0	3906 B14	3954 D5	5310 F3	6753 D7	7516 F9	7912 A4
3412 C5	3554 D10	3603 B11	3656 D14	3709 C6	3861 E2	3907 B14	3955 D5	5311 E1	6805 A3	7517 C10	7913 A4
3415 C5	3555 B10	3604 D11	3657 D14	3711 C8	3862 F4	3908 C13	3957 B8	5312 C2	6806 A3	7518 C9	7914 A6
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3511 E9	3558 A9	3607 D12	3660 D14	3753 D6	3865 D2	3912 F7	3960 D7	5315 D2	6809 A1	7521 B9	7921 B9
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3514 F9	3561 C9	3610 D14	3664 B15	3804 B1	3868 F2	3915 E11	3971 B11	5318 C2	6811 D5	7524 A10	7924 C13
3515 F9	3562 C9	3611 D13	3665 B15	3805 A1	3869 F2	3916 E10	3972 A8	5319 F5	6812 D6	7525 A10	7925 A12
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



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




6 7 8 9 10 11 12 13



PARTSLIST VIDEOPANEL

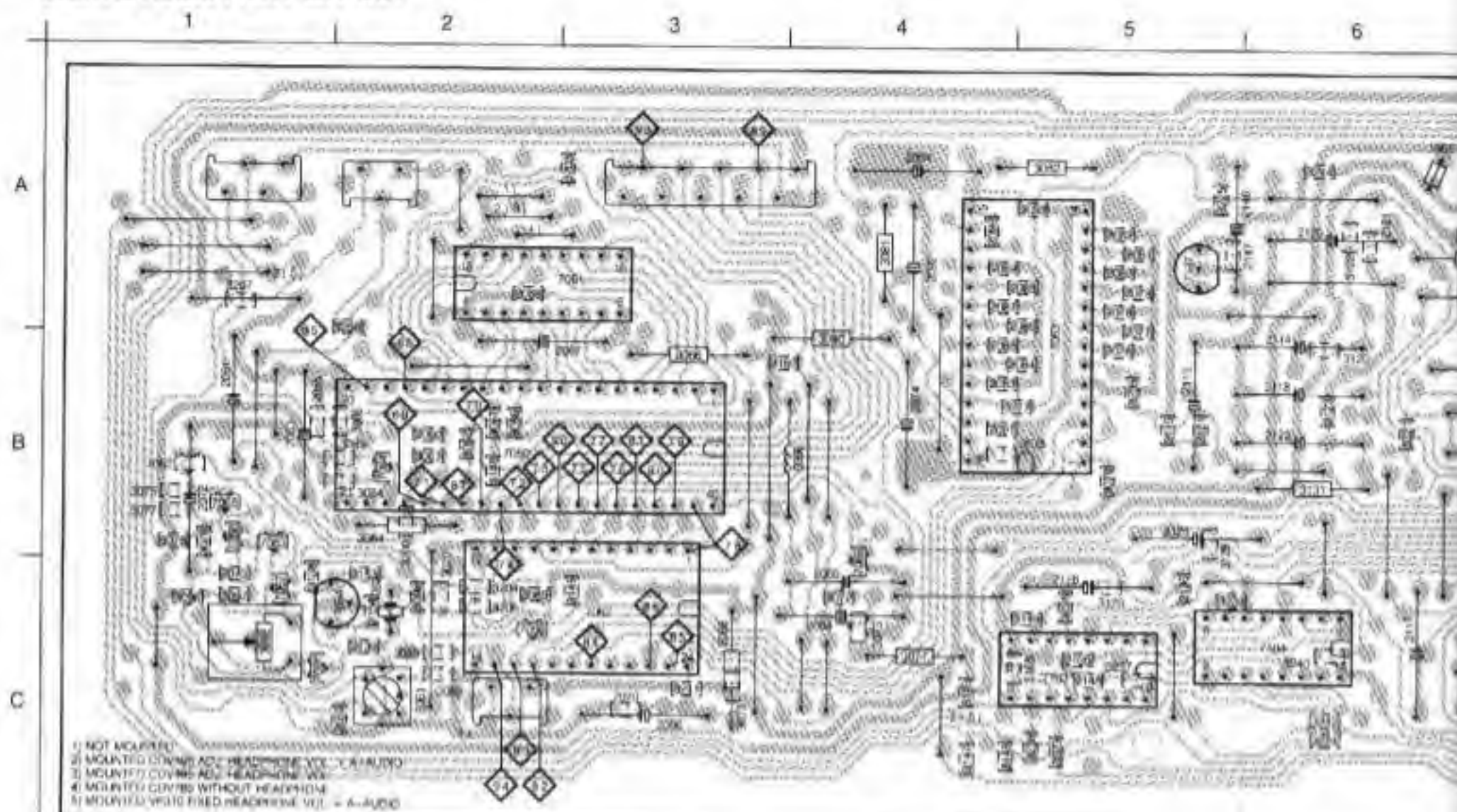
Connectors					
1011	4822 267 40575	3P MALE FOR WTB	2820	4822 121 43869	68NF 5% 50V
1012	4822 267 40722		2821	4822 121 43867	22NF 5% 50V
1014	4822 267 40699	4.FOLD	2827	4822 124 40196	220UF20% 16V
1017	4822 265 30378	4P MALE FOR BTB-WTB	2828	4822 124 40196	220UF20% 16V
1018	4822 265 30378	4P MALE FOR BTB-WTB	2829	4822 121 43867	22NF 5% 50V
			2846	4822 121 41854	150NF 5% 63V
unit					
1900	4822 214 51801		3316	4822 050 14709	47R00 1% 0,4W
			3318	4822 050 21801	180R00 1% 0,6W
2311	4822 124 40435	10UF20% 50V	3338	5322 101 10372	10K 20% 0,5W
2318	4822 124 41577	4,7UF 20% 50V	3346	4822 050 15602	5K60 1% 0,4W
2320	4822 124 40433	47UF20% 25V	3353	4822 050 24703	47K00 1% 0,6W
2329	4822 122 32185	10PF 2% 100V	3354	4822 050 21002	1K00 1% 0,6W
2333	4822 122 32062	470PF 2% 100V	3361	4822 052 10478	4R70 5% 0,33W
2343	4822 121 43066	1NF 1% 400V	3362	4822 052 10478	4R70 5% 0,33W
2346	4822 122 33064	330NF80%Y5V 25V	3363	4822 052 10478	4R70 5% 0,33W
2352	4822 122 33105	56NF10%X7R 63V	3402	4822 050 21002	1K00 1% 0,6W
2355	4822 124 40196	220UF20% 16V	3403	4822 050 21501	150R00 1% 0,6W
2357	4822 124 40196	220UF20% 16V	3407	4822 050 22202	2K20 1% 0,6W
2359	4822 124 40196	220UF20% 16V	3412	4822 050 22401	240R00 1% 0,6W
2373	4822 122 31316	100PF 2% 100V	3505	4822 052 10478	4R70 5% 0,33W
2384	4822 124 40435	10UF20% 50V	3518	5322 101 14011	100E CERM LIN 0,5W
2385	4822 124 40435	10UF20% 50V	3527	4822 050 29101	910R00 1% 0,6W
2395	4822 122 32444	33PF 5% 50V	3529	4822 050 15602	5K60 1% 0,4W
2412	4822 122 33325	470NF 16V	3542	5322 101 10372	10K 20% 0,5W
2501	4822 122 33325	470NF 16V	3545	5322 101 10372	10K 20% 0,5W
2506	4822 124 40196	220UF20% 16V	3551	5322 101 10372	10K 20% 0,5W
2507	4822 124 40433	47UF20% 25V	3558	4822 050 29103	91K00 1% 0,6W
2511	4822 124 41596	22UF20% 50V	3562	4822 051 10473	47K00 2% 0,25W
2544	5322 121 42386	100NF 5% 63V	3568	4822 050 23302	3K30 1% 0,6W
2557	4822 121 51321	8,2MF 1% 63V	3570	4822 050 23302	3K30 1% 0,6W
2559	4822 124 41577	4,7UF 20% 50V	3580	5322 101 14008	2K2 CERM LIN 0,5W
2560	4822 121 51321	8,2MF 1% 63V	3596	4822 050 21002	1K00 1% 0,6W
2581	4822 125 50045	20PF	3608	5322 101 14008	2K2 CERM LIN 0,5W
2584	4822 125 50045	20PF	3611	5322 101 14008	2K2 CERM LIN 0,5W
2591	4822 122 33325	470NF 16V	3621	4822 052 10478	4R70 5% 0,33W
2601	4822 124 40433	47UF20% 25V	3626	4822 100 10254	1K CERM LIN 0,5W
2621	4822 124 41525	100UF 20% 25V	3674	4822 050 22202	2K20 1% 0,6W
2622	4822 121 43867	22NF 5% 50V	3681	4822 050 21002	1K00 1% 0,6W
2625	4822 124 40242	1UF20% 63V	3683	4822 051 10102	1K00 2% 0,25W
2631	4822 122 33064	330NF80%Y5V 25V	3687	4822 050 22202	2K20 1% 0,6W
2632	4822 122 33064	330NF80%Y5V 25V	3701	4822 052 10478	4R70 5% 0,33W
2633	4822 122 33064	330NF80%Y5V 25V	3702	4822 052 10121	120R00 5% 0,33W
2640	5322 121 42114	1UF 5% 63V	3710	4822 050 21002	1K00 1% 0,6W
2644	4822 122 33205	12PF10%NP0 63V	3722	4822 116 52224	470E 5% 0,5W
2654	4822 124 40433	47UF20% 25V	3754	4822 050 21002	1K00 1% 0,6W
2657	4822 124 40435	10UF20% 50V	3755	4822 050 23309	33R00 1% 0,6W
2660	4822 124 40196	220UF20% 16V	3804	4822 116 52217	270E 5% 0,5W
2662	4822 124 40196	220UF20% 16V	3814	4822 050 24122	4K12 1% 0,6W
2664	4822 124 40196	220UF20% 16V	3833	4822 052 10109	10R00 5% 0,33W
2666	4822 124 40196	220UF20% 16V	3834	4822 052 10109	10R00 5% 0,33W
2675	4822 125 50045	20PF	5158	4822 156 21452	100UH
2700	4822 124 40435	10UF20% 50V			
2702	4822 124 40196	220UF20% 16V	5300	4822 157 63052	
2704	4822 124 40196	220UF20% 16V	5301	4822 157 53137	
2705	4822 125 50045	20PF	5302	4822 157 60017	
2706	5322 122 32143	22PF 100V	5303	4822 156 11001	
2708	4822 125 50045	20PF	5304	4822 157 53132	
2753	4822 124 40196	220UF20% 16V	5305	4822 156 21147	
2758	4822 124 40196	220UF20% 16V	5306	4822 320 40229	
2805	4822 124 40196	220UF20% 16V	5307	4822 156 10995	
2806	4822 124 40272	33UF20% 16V	5308	4822 156 11003	
2807	4822 121 43868	1,5NF 5% 50V			

					
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5310	4822 157 60032		7306	4822 130 60514	BC859B
5311	4822 157 63058		7307	4822 130 60887	BF840
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5380	4822 157 53134		7317	5322 130 41982	BC848BT
5400	4822 242 73555	5,900 000 MC	7318	5322 130 41982	BC848BT
5509	4822 320 40229		7319	5322 130 41983	BC858BT
5511	4822 157 52473	19UH	7320	5322 130 41982	BC848BT
5513	5322 320 40099		7321	5322 130 41982	BC848BT
5514	4822 156 21026	34 UH	7322	5322 130 41982	BC848BT
5515	4822 157 52473	19UH	7323	5322 130 41982	BC848BT
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5582	4822 242 80001		7501	4822 209 62085	LM2940CT-12
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5614	4822 156 11001		7513	5322 130 41983	BC858BT
5621	4822 156 10995		7514	5322 130 41982	BC848BT
5622	4822 320 40051	CHROMINANCE	7531	5322 130 41982	BC848BT
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5671	4822 156 20966	47 MUH	7563	5322 130 44336	BSV52
5675	4822 242 70933	4,433 619 MC RW43	7564	5322 130 44336	BSV52
5681	4822 320 40229		7567	5322 130 41982	BC848BT
5682	4822 156 21452	100UH	7581	5322 130 41982	BC848BT
X-tal 			7582	5322 130 41982	BC848BT
5700	4822 242 71861	14,300 000 MC	7583	5322 130 41982	BC848BT
5701	4822 242 72514	15,000 000 MC	7590	5322 130 41982	BC848BT
			7591	5322 130 44336	BSV52
6300	4822 130 30862	BZX55-C9V1	7601	5322 130 41982	BC848BT
6305	5322 130 31928	BAS16	7602	5322 130 41982	BC848BT
6306	4822 130 31983	BAT85	7603	5322 130 41982	BC848BT
6401	4822 130 34173	BZX55-C5V6	7609	5322 130 41982	BC848BT
6402	5322 130 34834	BZX55-C3V6	7610	5322 130 41982	BC848BT
6551	4822 130 30621	1N4148 (UAW)	7611	5322 130 41982	BC848BT
6555	4822 130 30621	1N4148 (UAW)	7612	5322 130 41982	BC848BT
6625	4822 130 30621	1N4148 (UAW)	7613	5322 130 41982	BC848BT
6700	4822 130 30621	1N4148 (UAW)	7614	5322 130 41982	BC848BT
6755	4822 130 34173	BZX55-C5V6	7641	5322 130 41982	BC848BT
6805	4822 130 30621	1N4148 (UAW)	7645	5322 130 41982	BC848BT
6806	4822 130 30621	1N4148 (UAW)	7650	5322 130 41982	BC848BT
6807	4822 130 81375	BZX84-C3V9	7651	5322 130 41983	BC858BT
6808	4822 130 81375	BZX84-C3V9	7652	5322 130 41982	BC848BT
6809	4822 130 33668	BZX55-B9V1	7657	5322 130 41982	BC848BT
6810	4822 130 33668	BZX55-B9V1	7658	4822 130 60514	BC859B
			7659	5322 130 41982	BC848BT
7302	5322 130 41983	BC858BT	7662	5322 130 41982	BC848BT
7304	5322 130 41982	BC848BT	7681	5322 130 41982	BC848BT
			7682	5322 130 41983	BC858BT
			7683	5322 130 42136	BC848CT
			7684	5322 130 41982	BC848BT
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			7702	5322 130 41982	BC848BT

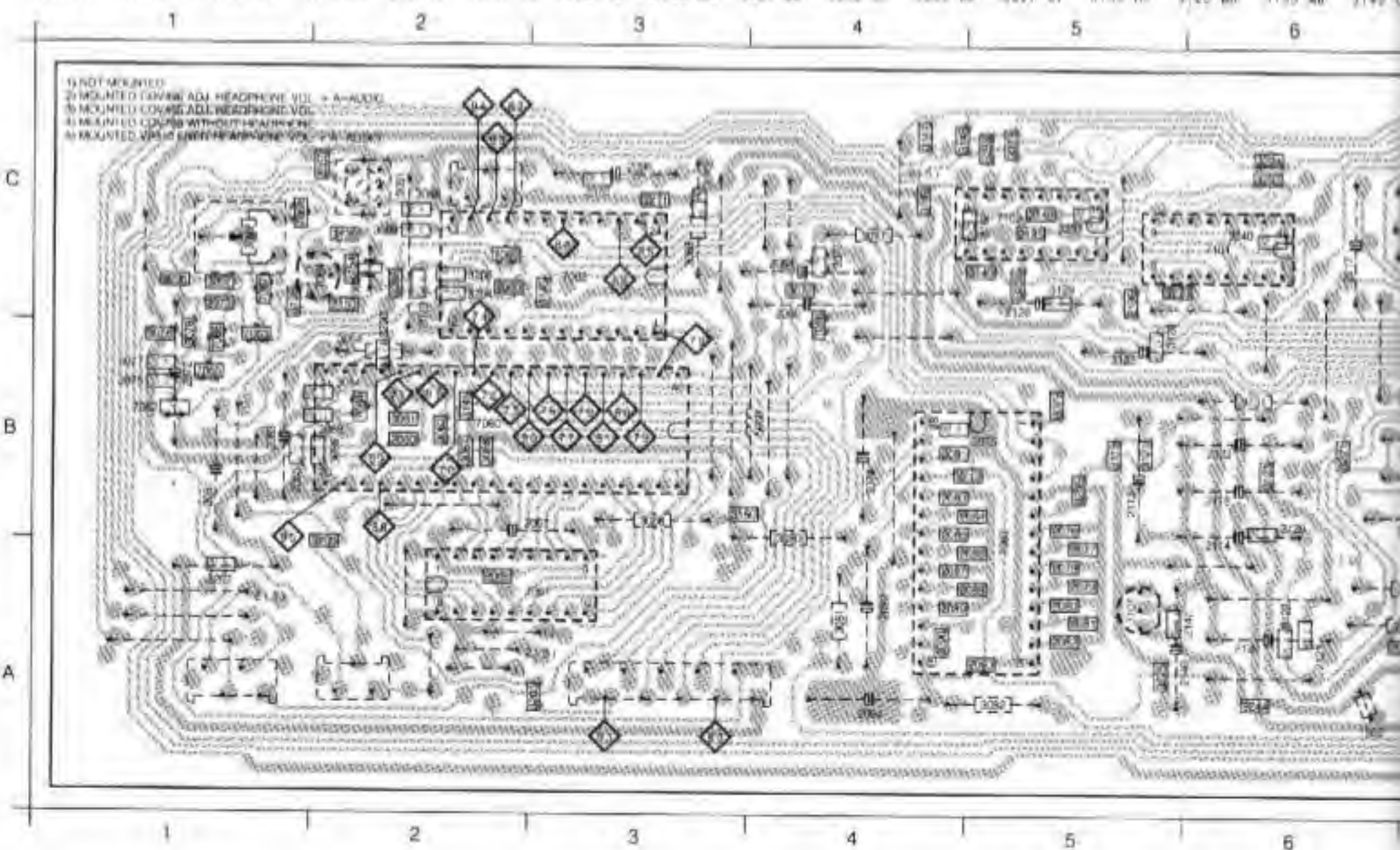


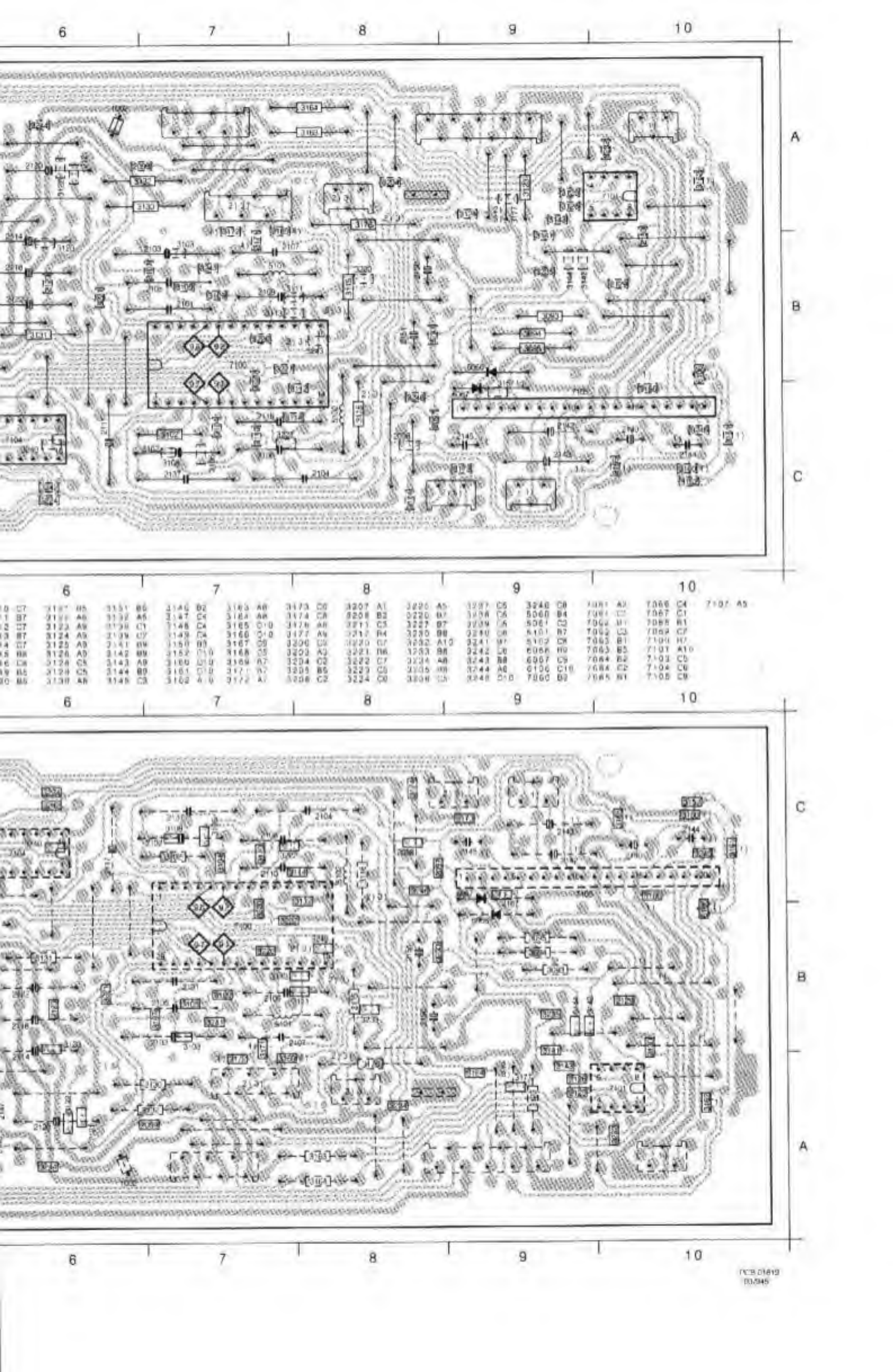
7901	4822 209 63716	NJM2233BD
7902	4822 209 63704	MSM7400
7903	4822 209 30216	TEA7650H/V4
7904	4822 209 62877	SAA7630P
7910	4822 209 63703	TBC-MA3
7911	4822 209 60753	TBC M-D
7912	4822 209 81349	MC1458P1
7913	4822 209 81349	MC1458P1
7914	4822 209 63505	PC74HC40103P
7915	5322 209 83218	PC74HC00P
7920	4822 209 71584	PC74HCT4053P
7921	5322 209 10422	HEF4538BP
7922	4822 209 61689	TDA3566/N5
7923	5322 209 11265	PC74HCT08P
7924	5322 209 83218	PC74HC00P
7925	4822 209 63497	CXA1145P
7926	4822 209 71584	PC74HCT4053P

DIGITAL AUDIO PRINT LAY-OUT



1				2				3				4				5				6											
1002	A6	2057	B2	2076	A6	2081	A4	2097	C5	2108	C7	2122	B0	2146	C10	2150	B8	2168	F5	2177	B1	2000	B3	2098	C2	2110	C7	2121	B5	2131	A
1043	C8	2048	A2	2076	A6	2088	A4	2098	C9	2109	B7	2123	B0	2142	C9	2151	B8	2169	C2	2178	B1	2008	C2	2102	C7	2111	B7	2120	A6	2130	A
2049	A2	2070	C3	2080	A6	2089	A4	2094	A6	2110	C7	2128	B5	2140	C9	2158	C2	2170	C7	2179	B5	2009	C2	2103	B7	2112	B7	2123	A9	2138	A
2060	B2	2072	B1	2081	A9	2090	A4	2101	B7	2113	B5	2126	C5	2144	C10	2154	C2	2170	C4	2180	B4	2000	C1	2104	C7	2113	B7	2124	A8	2138	A
2061	B1	2073	C1	2082	A5	2091	B4	2102	C2	2114	B6	2129	B10	2145	C9	2161	B2	2172	C8	2181	A4	2009	B9	2105	B7	2114	A7	2125	A9	2140	A
2063	B1	2074	B4	2083	B6	2092	A4	2103	B7	2117	C8	2130	B10	2146	A6	2162	B2	2170	C8	2182	A5	2004	B9	2106	C7	2115	A8	2126	A9	2140	A
2064	C4	2075	B5	2084	B4	2093	A6	2104	C8	2116	B6	2130	C5	2147	A8	2164	B2	2173	C4	2183	B9	2005	B9	2107	B7	2116	C8	2126	C5	2140	A
2066	B1	2076	B5	2085	A4	2094	A5	2105	B7	2120	A6	2135	C5	2148	C5	2165	B9	2176	B1	2184	C1	2006	C1	2108	C7	2118	B5	2129	C5	2144	A
2066	C4	2077	A5	2086	A4	2096	C3	2107	B7	2121	A6	2137	C7	2148	C5	2165	B2	2178	B3	2186	B2	2007	C1	2109	B7	2119	B6	2129	A9	2144	A





6.12 TRAYMOTOR CIRCUITDIAGRAM																					
3001	G 7	2075	G 9	2105	L 2	2110	A 3	3081	F 9	3092	H 7	3103	M 1	3102	F 9	6071	F 8	6092	G 8	7084	H 3
2071	H 7	3092	H 6	2106	L 4	2107	A 4	3082	G 2	3093	J 2	3104	K 2	3109	F 5	6073	A 8	6100	I 3	7085	I 7
2072	F 6	2093	H 6	3107	L 5	3073	A 5	3083	F 5	3094	J 3	3105	M 3	3164	F 12	6075	L 4	7071	B 9	7100	K 3
2073	D 9	2101	M 5	2108	M 3	3074	F 6	3084	F 5	3106	L 2	3111	N 2	3165	G 3	6082	G 4	7081	F 4	7101	B 3
2074	B 8	2101	M 5	2111	N 3	3075	F 6	3085	G 7	3102	M 2	3181	J 3	3309	M 8	6091	G 8	7082	H 5	7200	B 3

